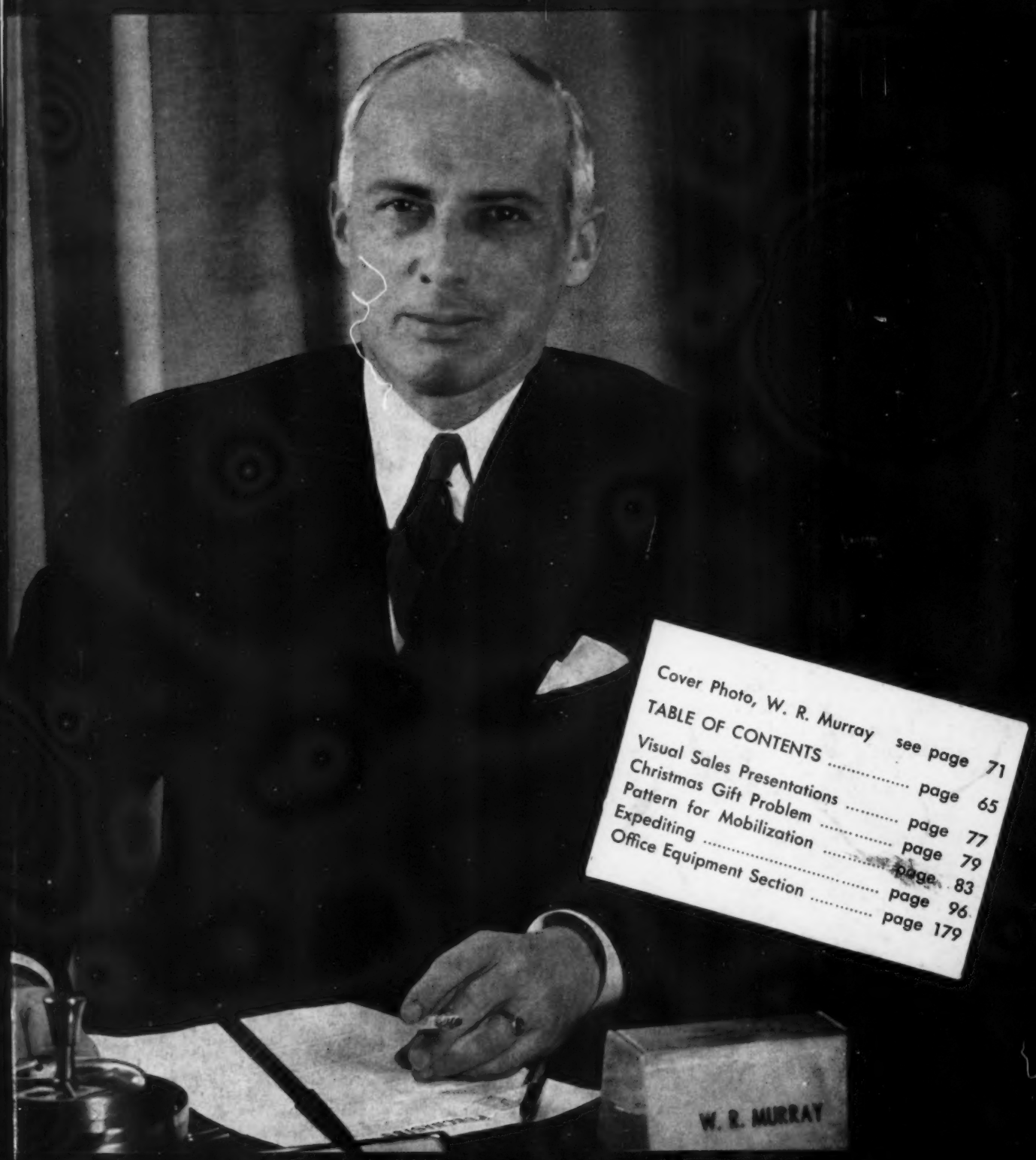
PURCHASING

OCTOBER, 1950



Cover Photo, W. R. Murray see page 71
TABLE OF CONTENTS ..... page 65
Visual Sales Presentations ..... page 77
Christmas Gift Problem ..... page 79
Pattern for Mobilization ..... page 83
Expediting ..... page 96
Office Equipment Section ..... page 179

A CONOVER MAST PUBLICATION • 50 CENTS

R v.29 Oct.-Dec. 1950

5,000,000 LBS. OF PULL OR PUSH

Giant new testing machine lubricated 100% with TEXACO

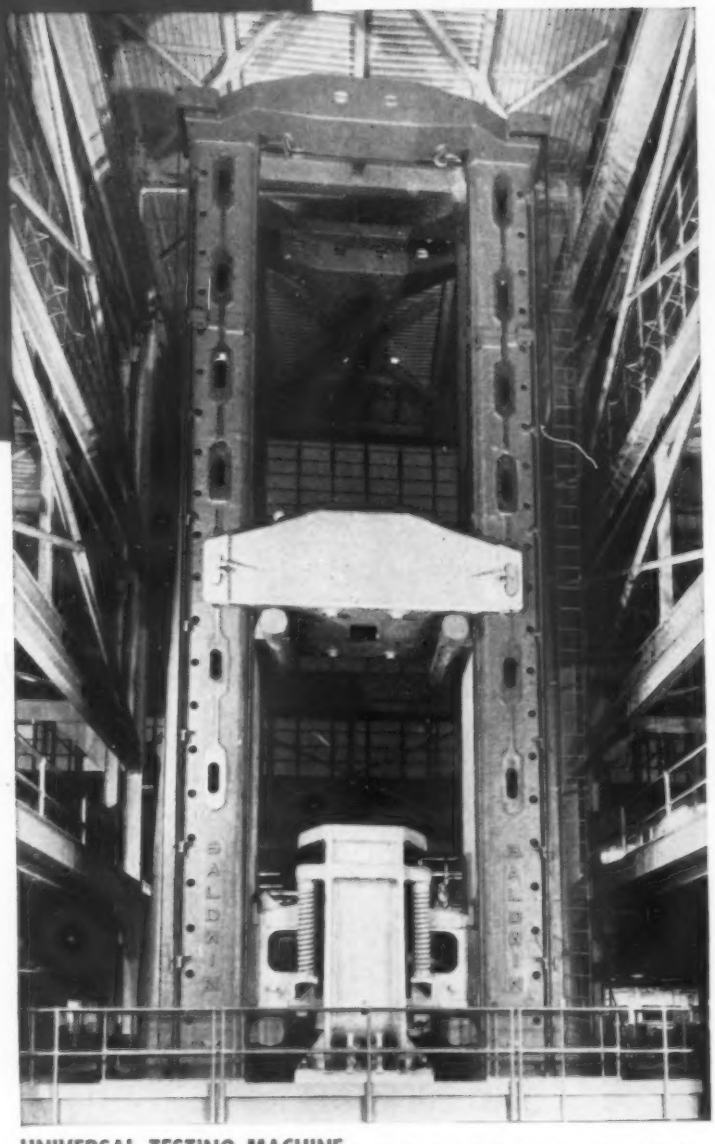
How much load can a given material or structural part carry? How far will it stretch before snapping? This Universal Testing Machine gives the answers by putting as much as 5 million pounds of squeeze or pull on specimens up to 32 feet long.

Yet, despite its massiveness, the machine is delicately sensitive. It moves smoothly even when exerting all its tremendous force, thanks to effective lubrication – *Texaco*.

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That means more than just the proper lubricants (which Texaco can supply for *any* job). It means the combination of Texaco Lubricants and Texaco Lubrication Engineering Service to assure that the right oils and greases are used properly.

This Texaco combination is stepping up efficiency (often with a reduction in the number of lubricants used) and bringing down costs in plants everywhere. It can do the same in your plant. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



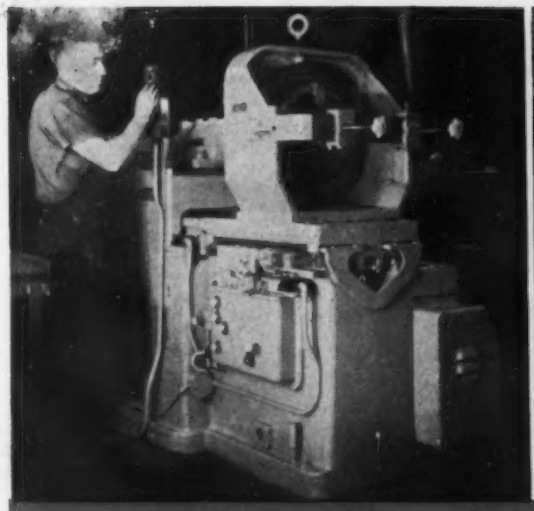
UNIVERSAL TESTING MACHINE, built by Baldwin Locomotive Works, Eddystone, Pa., tests massive structural specimens, can exert compression or tension loads up to 5,000,000 lbs. The machine, largest of its kind, extends from 16 feet below ground to 50 feet above, and its great mass (approximately 750,000 lbs.) eliminates need for holddown studs. Pull or pressure is applied by the sensitive crosshead (a delicate assembly weighing 125,000 lbs.) moving downward, between stationary tension crosshead and 104,000-lb. bedplate, on two precision loading screws, each 52 feet long, 16 inches in diameter, and weighing 40,000 lbs. The machine* is lubricated *exclusively* with Texaco – and *only six Texaco lubricants are required* to handle the hydraulic system, all gears, screws, cables, motors, pumps, ways, air cylinders and bearings.
**Name of user on request*

TEXACO

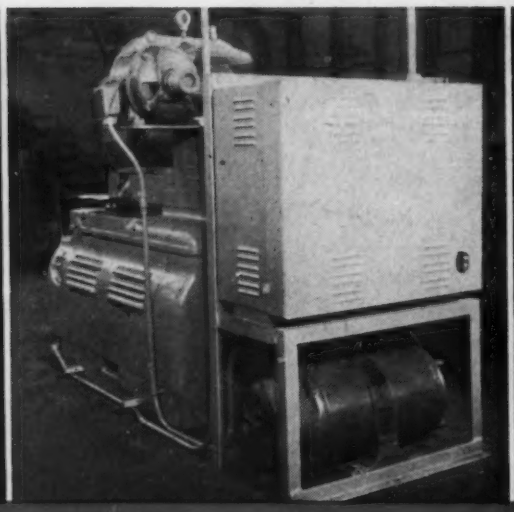
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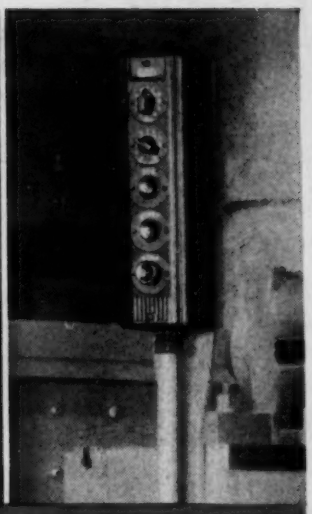
Tech.



Two separate Speed Selector Controls are used for this automatic 2 cutting speed operating cycle.



Rear view illustrates control equipment and drive motor on top of machine.



The two hand dials provide an extremely wide range of optimum surface cutting speeds. A twist of the finger instantly changes the speed.

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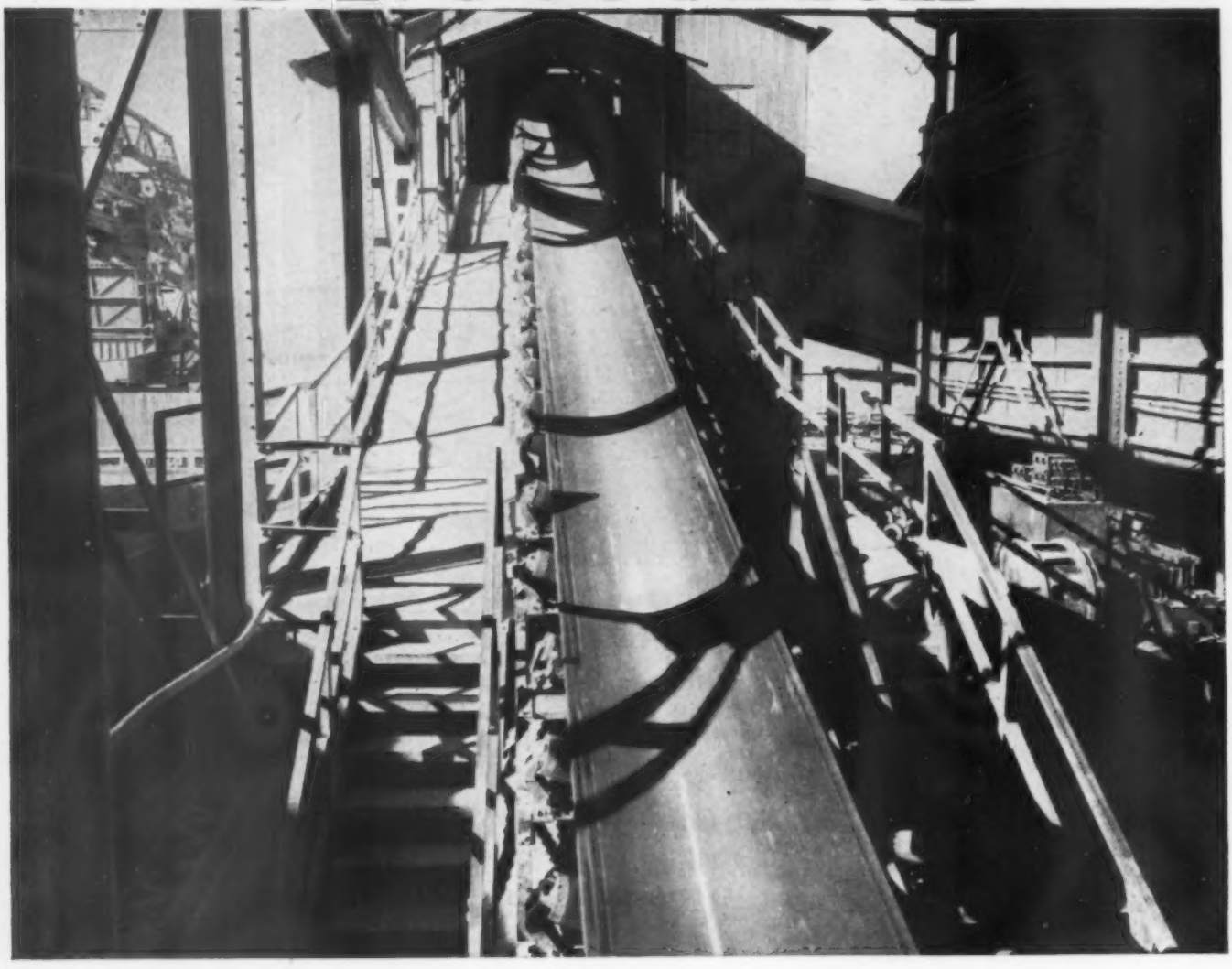
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PURCHASING, published monthly, by PEEAYE, INC., subsidiary CONOVER-MAST PUBLICATIONS, INC., Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York 17, N. Y. Entered as second class matter August 8 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription rates: United States, U. S. Possessions and Canada: $4 per year; elsewhere $6 per year. Single copies 50c. Volume XXIX, No. 4.

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



60 million tons in 11 years B. F. Goodrich belt is still in service

IT HAS cost less than $125 for belt repairs to keep that beltroad in service for 48,000 hours, averaging 12 hours a day, 7 days a week, for 11 years, handling well over 60 million tons of copper ore. It's at the Chile Exploration Company in Chuquicamata, Chile.

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Conveyor Belts BY
B.F.Goodrich
RUBBER FOR INDUSTRY

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at mid-century:

a look at the first fifty years . . .
a pledge for the ones to come



A few short years before the beginning of the twentieth century . . . in an atmosphere of national economic distress . . . Inland Steel got its start in life. With $65,000 in hand, the infant set out to make its way in midwestern industry. Its aim: to make steel the way steel users wanted it, at a fair price, and on a fast schedule.

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We'll continue to shoot at the same target during the next 50 years—*steel . . . the way you want it when you need it.*

	Inland in 1900	*Inland in 1950*
Ingot capacity:	none*	3,750,000 tons
Tons of finished products shipped:	23,000	3,200,000
Total assets:	$435,000	$325,000,000
Number of employees:	250	25,000
Investment per employee:	$1,740	$13,000
Annual Payroll:	$142,000	$96,000,000
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(All figures are approximate)

PRODUCTS MANUFACTURED:

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Bars, Harrow teeth, Plow beams, Fence posts

*First open hearth furnace installed in 1902.

1950

Hot rolled sheets and strip, Cold rolled sheets and strip, Enameling iron sheets, Electrical sheets, Galvanized sheet products, Hot dipped tin plate, Electrolytic tin plate, Black plate, Plates, 4-WAY Safety Plate, Bars, HI-BOND reinforcing bars, Structural shapes, Sheet piling, Fence posts, Sign posts, Rails, Joint bars, Tie plates, Track spikes, Pig Iron, Coal chemicals, Special steels.



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Old Package	410 lbs.
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Weight Saving	46 lbs.

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Weight Saving	16 lbs.

No. 7023

Gross Shipping Weight	
Old Package	39 lbs.
*New Package	34 lbs.
Weight Saving	5 lbs.

No. 7147

Gross Shipping Weight	
Old Package	95 lbs.
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Weight Saving	12 lbs.



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General Wirebound Crate



General Nailed Box



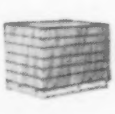
General Corrugated Box



General Cleated Corrugated Container



General All-Bound Box



Generalift Pallet and Pallet Box



General Watkins-Type Box

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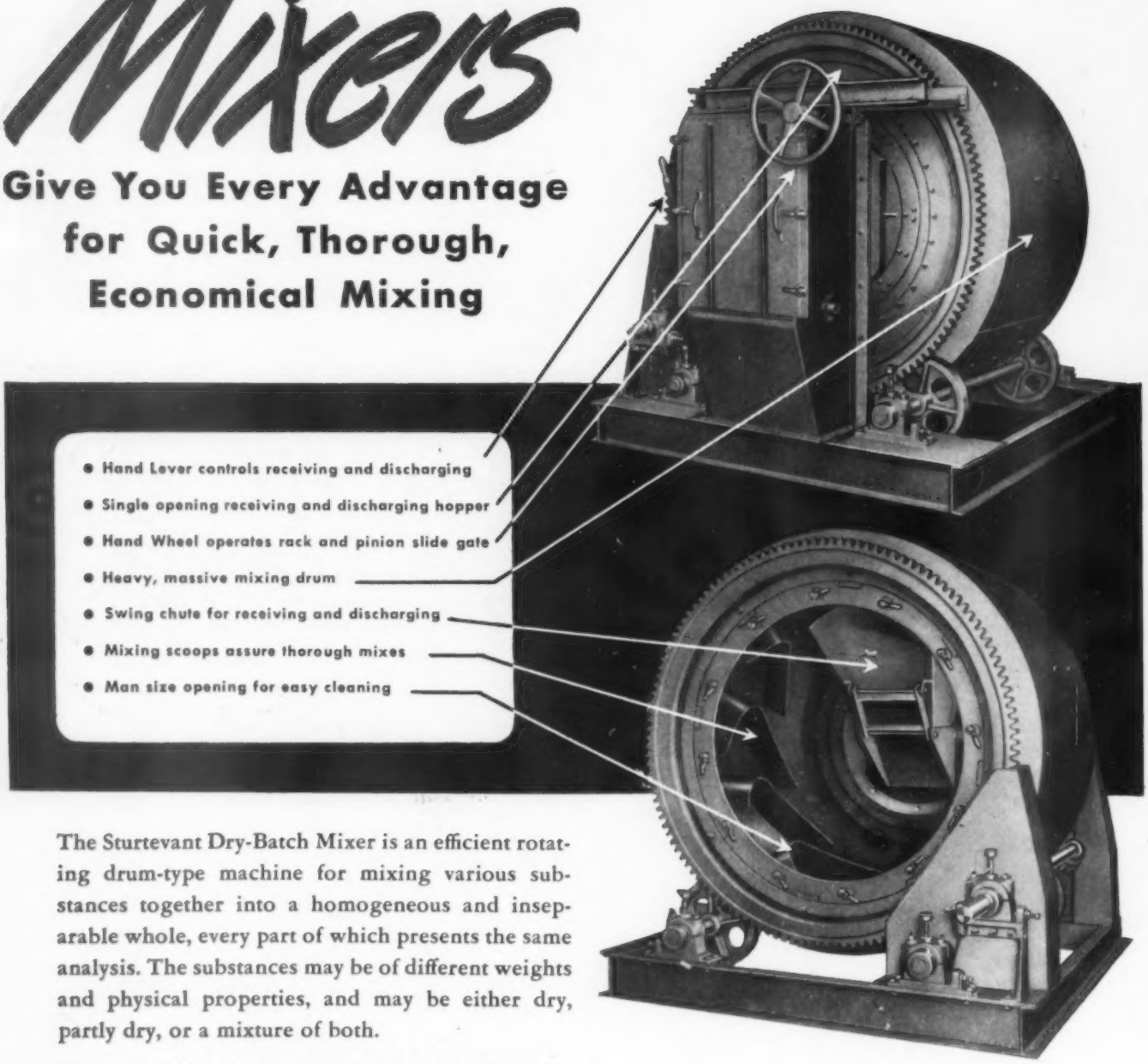
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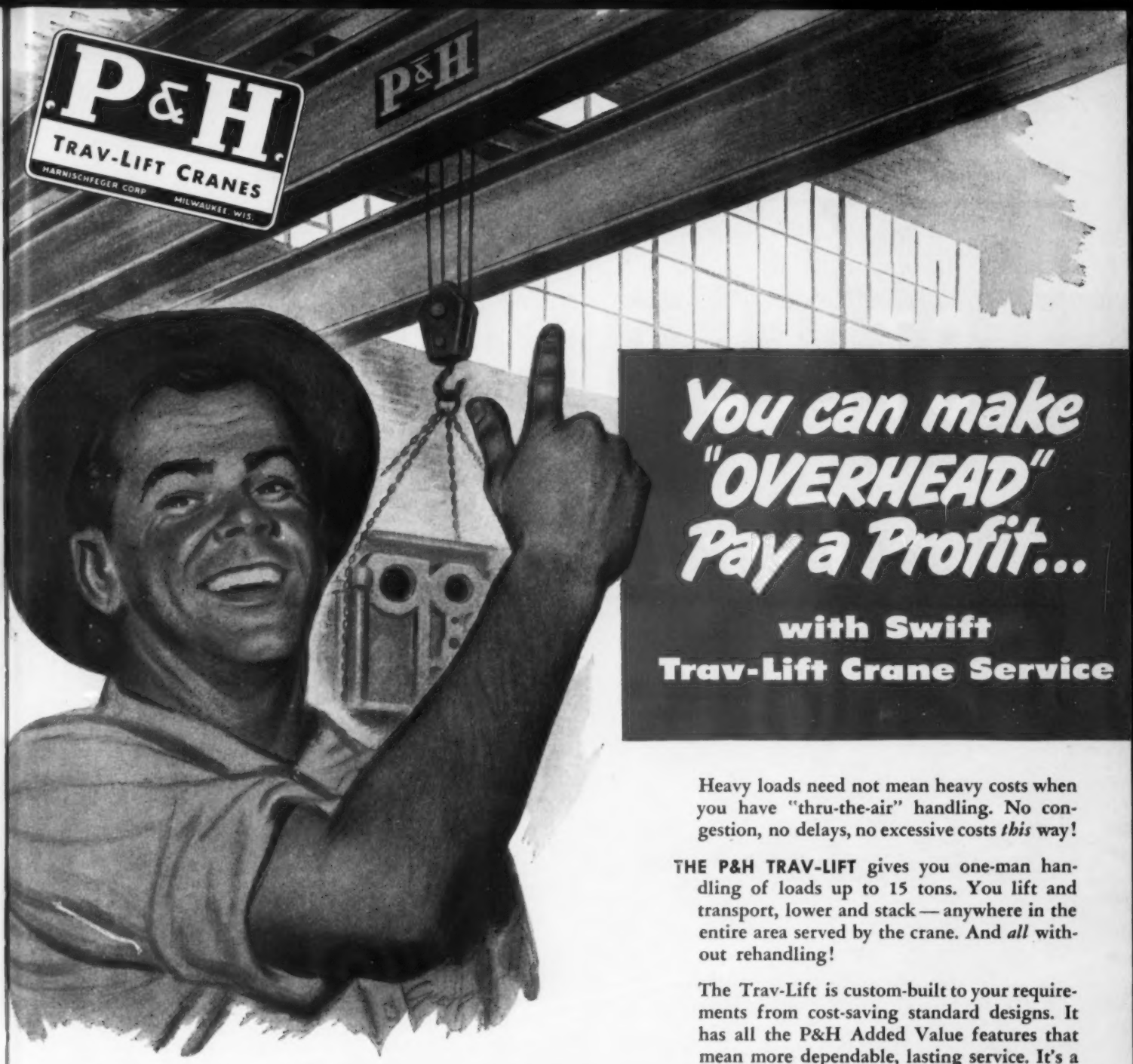
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P&H Trav-Lift Cranes are built in capacities up to 15 tons

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VARIABLE SPEED FULL MAGNETIC CONTROL provides 5 distinct steps for all motions: controlled from pendant push-button or from operator's cab.

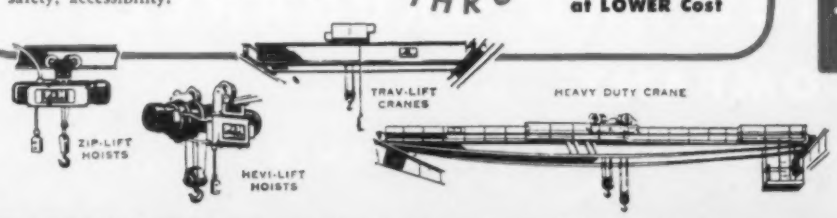
SAFE — Only 110 volts at the push-button when floor-controlled. Start-stop main line contactor, disconnect switch, thermal overload protection, magnetic limit switch and powerful brakes assure maximum safety.

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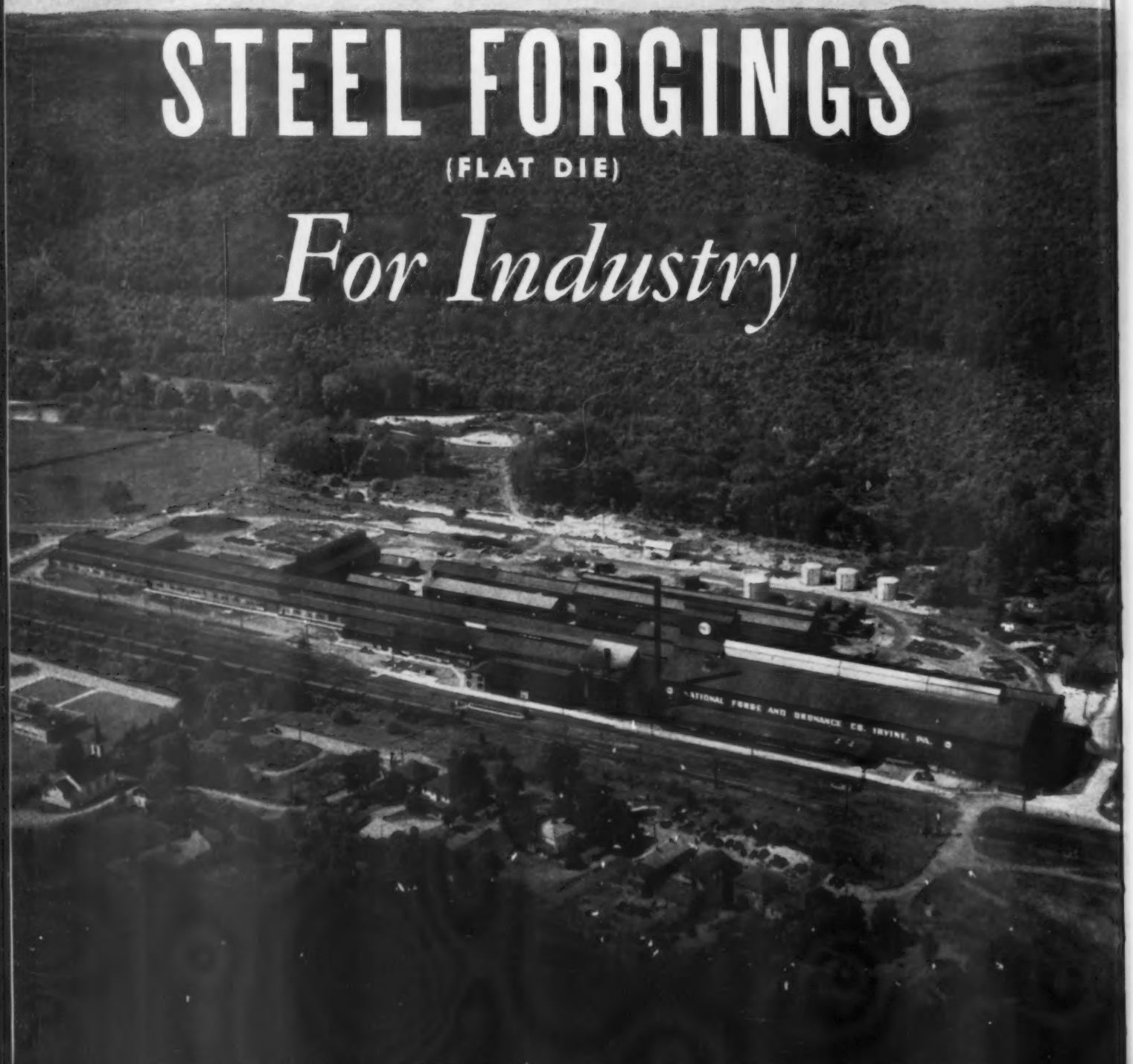
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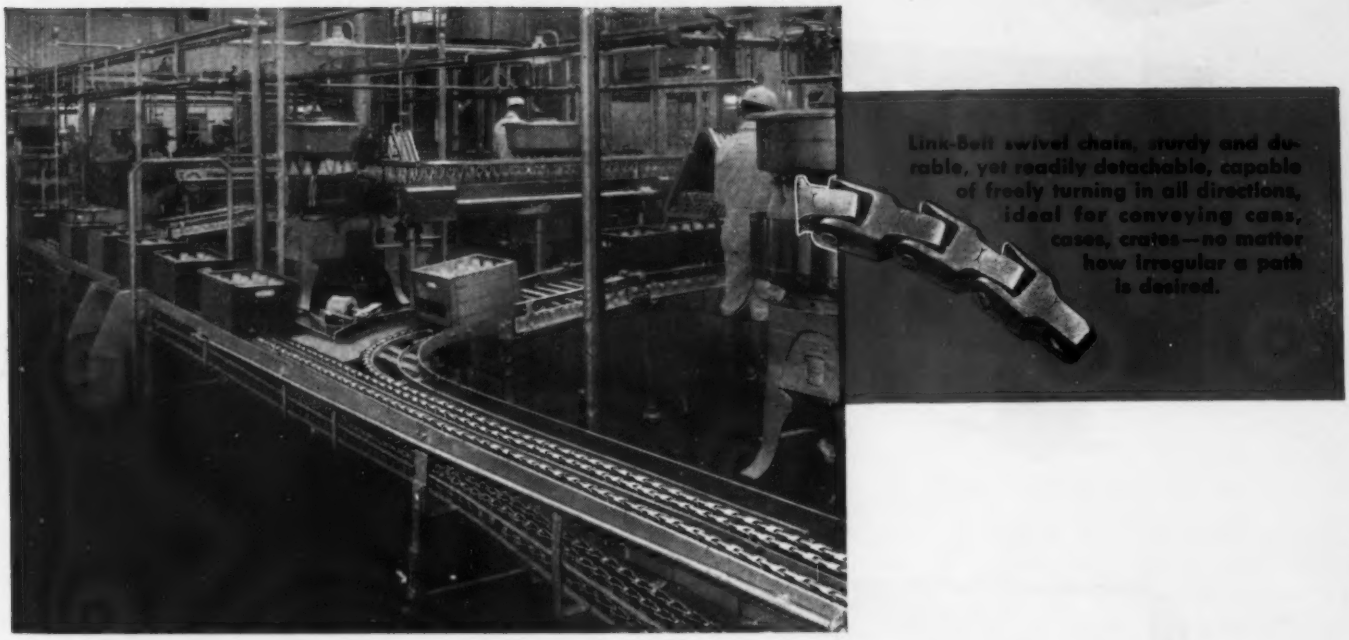
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For Industry



NATIONAL FORGE AND ORDNANCE COMPANY

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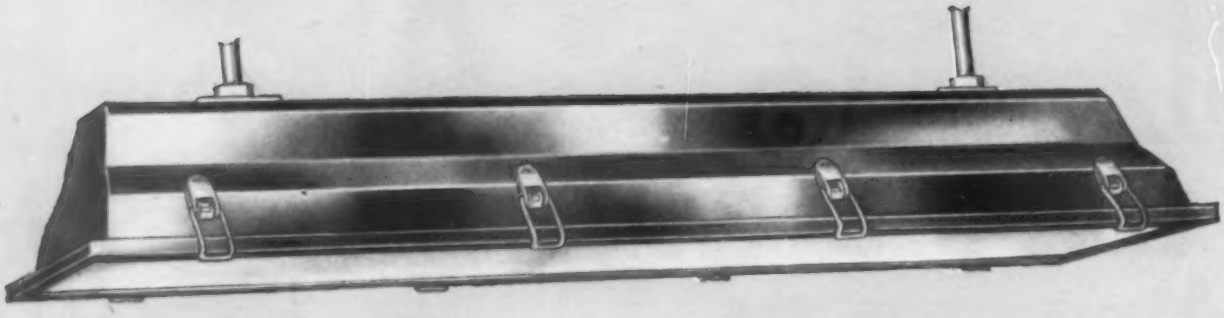
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PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

October 2, 1950.

STRICTER CONTROLS MAY BE NECESSARY SOON

Initial controls over industry will rapidly become inadequate, and will be tightened up into a full-blown system of allocations and priorities controls.

This is the view of Government advisers who maintain that the military program, as currently foreseen, will not take enough steel and non-ferrous metals to disjoint the economy, but that pressure for supplies from civilian industry will be so great that the resultant scramble for materials will require specific controls.

Greatest pinch in supplies will be in non-ferrous metals---especially aluminum, copper and copper alloys. The dearth of these materials, already becoming apparent, will develop quickly.

Original thinking was that the aviation program would exert a materials demand more quickly than ordnance and tanks, and that shortages would appear first in non-ferrous, and would develop in steel and steel products at a later date. This premise is now discounted, and it is felt that a shortage in steel will develop along with non-ferrous.

INVENTORY CONTROL AT THE TOP OF THE LIST

First general control efforts will be directed against excessive accumulation of inventory. Means of preventing excessive inventory---both speculative hoarding against future price increases and inventory acquisition to guarantee continuity of production schedules---was the subject of considerable controversy during all of World War II.

Early efforts at inventory control were aimed at restricting inventory to "normal" levels, and war controls administrators shied away from rigid restrictions against inventory accumulation until the loose priorities system was developed into a specific system of allocating materials.

It is obvious that any controls system---even the most general---if it is to be effective, must be accompanied by some method of curbing inventory accumulation; however, the initial inventory controls will not be too definite or restrictive.

CIVILIAN ECONOMY LIKELY TO BE CUT BACK A LITTLE

In general, the level of civilian production in 1951 will continue high---roughly at a rate equalling 1949, which is definitely below current levels. In terms of dollar volume, the rate of civilian output will even exceed 1949, but the dollar figure will have been inflated substantially by the rising price levels.

The control program will be aimed at cutting back the civilian economy to the 1949 production levels, and obviously with demand continuing high, the cutbacks will have to be initiated at the primary processing levels.

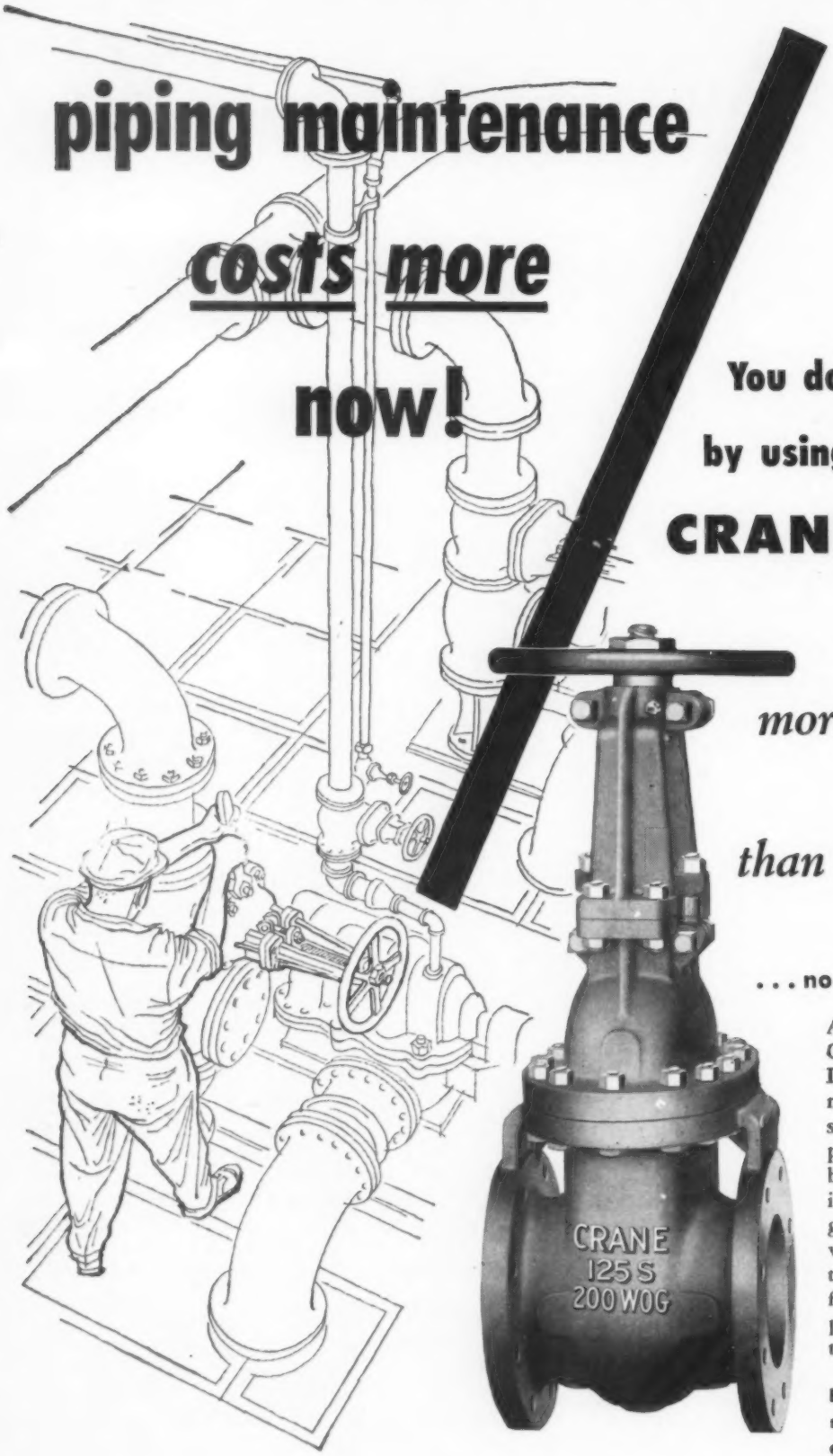
WORLD WAR II CONTROLS TO SET THE PATTERN

Control machinery will be reminiscent of World War II experience. The degree and method of control will be dictated by the actual conditions of materials availability, rather than by a rigidly projected materials control program.

The experience of World War II will serve as a guidepost in developing controls, but while this will introduce a greater degree of efficiency, it will not result in any shortcut from simple military priorities to an all-out system of allocations.

During World War II, the first effort at assuring delivery of materials to the munitions industry was a simple priority. There were two categories of industry---munitions and civilian, and the munitions industry was given a priority for delivery of steel, aluminum, copper and rubber. The civilian industry purchased on the open market.

piping maintenance costs more now!



You do less of it

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HOW THE CONTROL MACHINERY GREW IN WORLD WAR II

As military requirements increased to a point where the materials available to the civilian economy became scarce, the general scramble among civilian fabricators made it necessary to establish a system of civilian priorities. There was an "A Group" of priorities, which were military, and a "B Group", which were the civilian claimants for priority delivery of materials.

Pace of mobilization increased, and civilian industry of an essential nature was recognized to be as important as military requirements, and these claimants were moved up into the "A Group".

When essential civilian orders served against the primary processors of materials were so great as to interfere with delivery to military production, the military was stepped up into an "A" grouping. When the "AA" priorities were inadequate, an "AAA" priority was instituted. Finally, a directive was piled on top of the "AAA", and then it became apparent that the whole priority system was merely a "hunting license" for the manufacturer to go out and seek to get delivery of materials.

At this point, the need was for a system of specific allocations of materials to fill specific defense contracts. First problem was to establish a bill of materials for each category of military production, and then to allocate materials to meet this bill of materials.

Out of this approach arose the need of scheduling component parts so that materials and parts would be on hand simultaneously as they were required.

EVOLUTION OF CONTROLS WILL BE FASTER

How far we will have to go along this road of war controls will, of course, be dictated by the degree of emergency which develops.

The only factor which can be stated definitely is that whatever degree of control is necessary, the transition will be quicker.

Some of the stages of World War II controls may be bypassed, but it will be possible to trace developments in terms of what became necessary during the last war.

NO ELABORATE CONTROL AGENCY FOR THE PRESENT

Again as in World War II, the Governmental agency administering controls will follow an evolutionary pattern. Initial phases of the controls program as currently applied to industry are being administered by the Department of Commerce.

If the scale of mobilization is pushed up due to war developments, the degree of controls over industry will be intensified, and a more elaborate Governmental agency will be established.

INDUSTRY ADVISORY COMMITTEES TO BE SET UP

Industry will have an advisory voice in the controls program through a fairly extensive network of industry advisory committees.

These committees will be far greater in number than the committee groups established during the period of steel scarcity in 1948 when steel was allocated on a voluntary allocations program.

However, the number of committees will not fan out to as many as functioned in advisory capacity to WPB. As many as 800 advisory committees functioned during World War II, when the scarcity of manpower and materials affected every minute segment of industry.

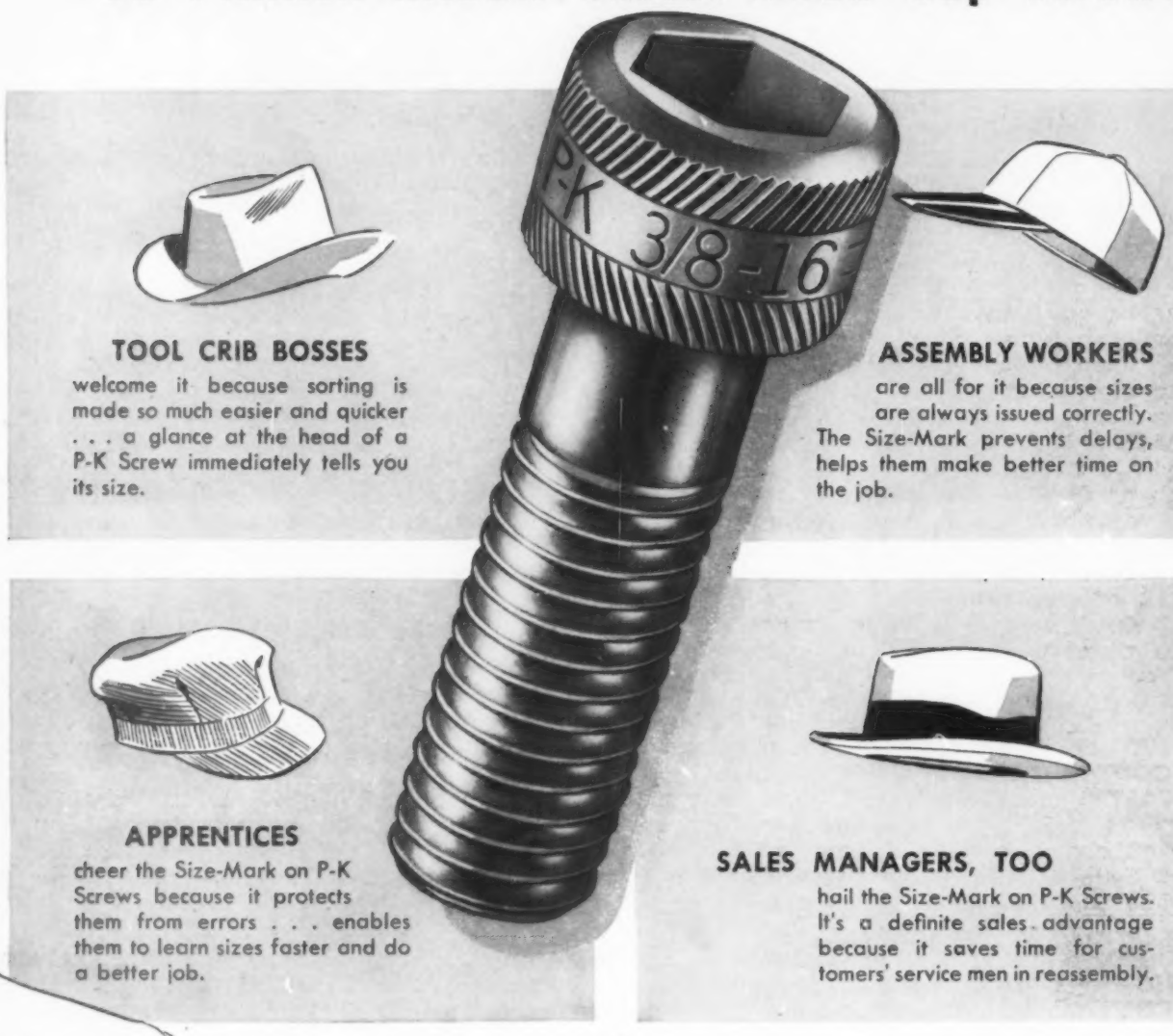
ONE HAND ON THE PLOW, THE OTHER ON A RIFLE

The scarcities which are likely to be most troublesome during the next six months will be in steel, non-ferrous metals, and rubber. While there may be an impact on other materials, the shortages will not be as drastic as in the metals.

As for manpower, there will be shortages in some skills, but labor supply will not become really troublesome until a rapid expansion of military personnel is ordered.

The current stages of defense preparation are more in the nature of keeping one hand on the plow and the other on a rifle---rather than converting from peacetime production into a war economy.

Everywhere—hats are off to the SIZE-MARK on PARKER-KALON Socket Head Cap Screws



TOOL CRIB BOSSES
welcome it because sorting is made so much easier and quicker . . . a glance at the head of a P-K Screw immediately tells you its size.

ASSEMBLY WORKERS
are all for it because sizes are always issued correctly. The Size-Mark prevents delays, helps them make better time on the job.

APPRENTICES
cheer the Size-Mark on P-K Screws because it protects them from errors . . . enables them to learn sizes faster and do a better job.

SALES MANAGERS, TOO
hail the Size-Mark on P-K Screws. It's a definite sales advantage because it saves time for customers' service men in reassembly.



And the GEAR GRIP† prevents *slipping* — even when fingers are oily! Send for samples . . . see for yourself how P-K* Size-Marked Socket Head Cap Screws can put your product ahead, assembly-wise and sales-wise. Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y.

NEW . . . . . Size-marked Engineered Hex Keys

Key size, and corresponding socket set and cap screw sizes, are clearly stamped on the arm of Parker-Kalon Engineered Hex Keys. P-K Hex Keys are again available in attractive, compact steel cases with easy-to-use key island (Set No. 111), and in durable plastic pouches (Set No. 45).

P-K TRADE MARK

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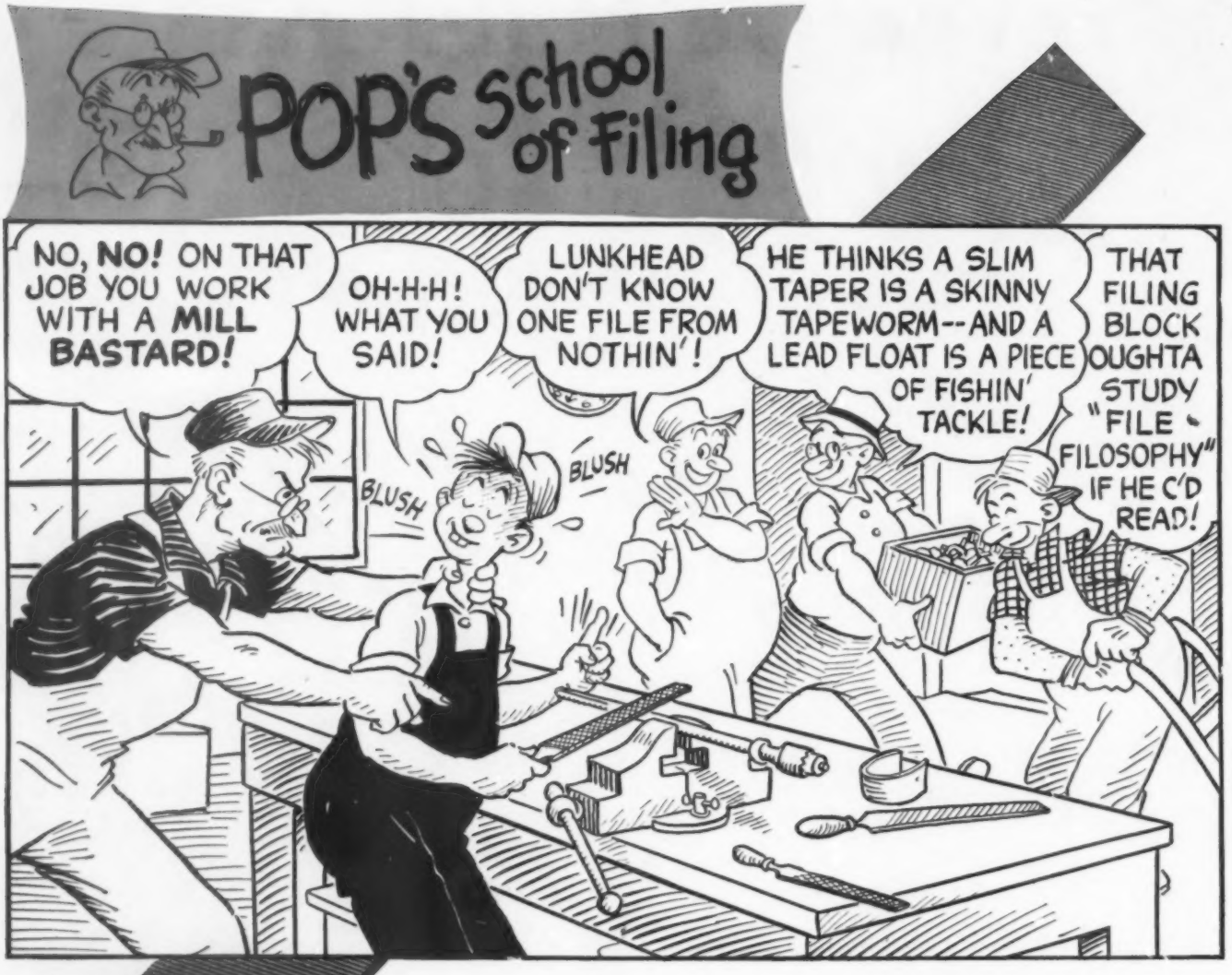
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——When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.——

☐ **1. LIVE CENTER**—"Wee" live center, no larger than a conventional stationary center head, is covered in folder. Stock sizes, shank data, dimensions and prices, etc., given. Herbert Cross & Son, 9 Highland Ave., Bala-Cynwyd, Pa.

☐ **2. REAMERS** — Circular No. 427-4 details "Blue Helix" Reamers, which will cut easily and freely in heat treated alloy steels of Brinnell 375 hardness and in some cases even harder. Pratt & Whitney, Divn. Niles-Bement-Pond Co., West Hartford 1, Conn.

☐ **3. CELLULAR RUBBER**—Booklet describes and illustrates variety of stock forms of Spongex, chemically blown cellular rubber, and outlines how special requirements are met. The rubber is flexible, elastic, compressible, light, and has low thermal conductivity. The Sponge Rubber Products Co., Shelton, Conn.

☐ **4. DISC GRINDING** — Safe handling, storage, mounting, and use of abrasive discs used in disc grinding and the features which are peculiar to this type of precision grinding are discussed in an 18-page booklet available from the Grinding Wheel Institute, P. O. Box 64, Greendale, Mass.

☐ **5. MATERIALS HANDLING** — Lev-R-Matic drive lift trucks, featuring split-second maneuverability in confined areas are detailed in new bulletin. Functional group of levers gives operator instant finger-tip control of tilting, elevating, forward-back movement. The trucks have no gears to shift. Mobilift Corp., 835 E. Main St., Portland 14, Ore.

☐ **6. VISUAL GRINDER**—Visual Grind, a new machine that is said to introduce important possibilities and adaptability in the contour grinding of tungsten carbide to close tolerances is detailed in a 6-page bulletin. Three grinding techniques — image, profile, and templet (combination) grinding — are combined in one machine. The Cleveland Grinding Machine Co., 6514 St. Clair Ave., Cleveland 3, O.

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New Products Section
Pages 130-176

☐ **7. PACKAGING PAPERS** — Samples of 21 glassine, greaseproof, waxed, coated and foil-laminated packaging papers are contained in a new 8-page folder. Selection chart describes principal characteristics of papers and their general uses. Riegel Paper Corp., 342 Madison Ave., New York 17, N. Y.

☐ **8. WELDING FITTINGS, FLANGES**—Catalog WF-1950, 88 pages, is packed with information on seamless carbon steel welding fittings and forged steel flanges. Includes standard schedules with specifications, list prices and sizes, information on dimensional tolerances, and numerous other important data. Grinnell Company, Inc., Providence 1, R. I.

☐ **9. CARTON SAVINGS**—Catalog folder No. 229B describes and illustrates wire stitching and stapling machines for better and faster job of box bottoming for all shippers. Bostitch, 767 Mechanic St., Westerly, R. I.

☐ **10. WELDED STEEL TUBING**—12-page illustrated booklet tells about the structural advantages, methods of fabricating and characteristics of welded steel tubing. Complete information is included on how hot and cold rolled as well as Zincgrip and Aluminized tubing is supplied and how it should be ordered. Armco Steel Corp., Middletown, Ohio.

(Please turn to page 20)

(Continued from page 19)

☐ **11. WATER COOLERS**—Booklet on water coolers tells how G-E water coolers make it easier to work harder. Air Conditioning Dept., General Electric Co., Sec. P-1, Bloomfield, N. J.

☐ **12. INDUSTRIAL PAPERS** — Booklet "Paper has a Fourth Dimension" tells how to avoid production lags and product failures by using the right paper for a specific job. Central Paper Co., Inc., 2446 Lakeshore Drive, Muskegon, Mich.

☐ **13. AIR & HYDRAULIC** Power —General information and a number of circuit diagrams on how air and hydraulics may be efficiently applied to industrial equipment is contained in a new 8-page booklet available from Rivett Lathe & Grinder, Inc. Brighton 35, Boston, Mass.

☐ **14. STORAGE EQUIPMENT** — Twenty-five types of equipment and eighteen accessories for parts and stock storage in manufacturing processes, and for use in tool cribs and shipping rooms, are described in folder #220. Maker claims savings up to 50% of floor space. Frick-Gallagher Mfg. Co., 401 Shubert Bldg., Philadelphia 2, Pa.

☐ **15. PLASTICS**—Plastics Bulletin No. 46 gives detailed general information on Teflon, heavy-duty plastic now finding important uses in chemical, electric and other industries. It is said to be superior in chemical resistance to any other known gasket material. E. I. DuPont De Nemours & Co., Inc., Wilmington, Del.

☐ **16. PLATERS' CLEANER** — An electrolytic cleaner compounded especially for use on steel, brass, nickel, and die castings is described and illustrated in a folder issued by Detrex Corp., Box 501, Detroit 32, Mich.

☐ **17. FOUNDRY SHAKEOUT**—A new heavy-duty "CA" foundry shakeout that is said to give faster, better, cleaner separations of sand and castings from flasks and molds is the subject of Folder No. 2338, published by Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

LATEST TRADE LITERATURE

(This is Page 20)

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☐ **18. RED CEDAR**—Facts folder outlines the botanical history and classification, growth range, properties and uses of Western Red Cedar. Also covers in brief the grades into which it is manufactured. Western Pine Assn., 510 Yeon Bldg., Portland 4, Ore.

☐ **19. WOVEN FABRICS**—Technical information about Lumite woven fabrics for manufacturers who may be able to use them in their products or production processes is presented in a new 22-page booklet. Lumite Divn., Chicopee Mfg. Corp., 40 Worth St., New York 13, N. Y.

☐ **20. MOTORS**—Bulletin No. B-201 on polyphase squirrel-cage motors includes construction and assembly details, speed-torque curves at varying full-load torque percentages for the three different types of the drip-proof motors—½ to 600 hp. Star-Kimble Electric Co., 200 Bloomfield Ave., Bloomfield, N. J.

☐ **21. SAWS**—Triple chip slitting and slotting saws with dual drive adaptors are detailed in 4-page bulletin No. 250 which includes list of sizes available from stock. Motch & Merryweather Machinery Co., 715 Penton Bldg., Cleveland 13, Ohio.

☐ **22. POWER CABLE**—Publication 19-150, "Super Coronol-Geoprene Power Cable for Circuits up to and including 15,000 Volts" contains charts and tables on physical and electrical properties, specification data, etc. Cable is suitable for direct burial in the ground or in aerial or raceway installations. Construction Materials Dept., General Electric Co., Bridgeport 2, Conn.

☐ **23. PHOTO ELECTRIC EQPT.** —Catalog 550 features 33 items of photo electric equipment and accessories for industrial applications, production control, counting, boiler and ventilating smoke detectors, burglar and warning devices. De-Tec-Tronic Laboratories, Dept. C., 1227 N. Clark St., Chicago 10, Ill.

☐ **24. SPEED REDUCERS**—Bulletin G-WBV covers new Imo-De Laval Gear Speed Reducers, including latest AGMA hp ratings, types of speed reducers, selection tables, etc., and has section describing vertical reducers for cooling tower service. De Laval Steam Turbine Co., Trenton 2, N. J.

☐ **25. METAL SPRAYING**—Bulletin 578 tells about Sprabond wire, new self-bonding metallizing material which provides unusually long wearing bearing surfaces. It also serves as foundation material for bonding a coating of different metal. Also recommended for cracked blocks and castings, molds, patterns, sand holes, thin sections, gas holes, soldering to aluminum and magnesium with ordinary soft solders, etc. Metallizing Engineering Co., Inc., 34 30th St., Long Island City 1, N. Y.

☐ **26. DRILL PRESSES**—Bulletin tells about new "Economy Model" bench and floor type 14" drill presses; accessories illustrated. Specifications and prices included. South Bend Lathe Works, 425 E. Madison St., South Bend, Ind.

☐ **27. MATERIALS HANDLING**— Series of material handling case studies outline the problem and solution of specific applications; results of new methods are given in statistical form. All reports show installation photographs. The Rapids-Standard Co., Inc., 342-6 Rapidstan Bldg., Grand Rapids, Mich.

☐ **28. STRAINERS, SEPARATORS** —Bulletin 46-50A, 16 pages, covers Y- and T-type strainers, suction strainers, multi-flow separators and receiver separators, giving dimensions, weights and list prices. It includes technical data

(Please turn to page 23)

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(*Continued from page 20*)
to aid in selecting proper type and capacity. American District Steam Co., North Tonawanda, N. Y.

☐ **29. THERMOCOUPLES** — Industrial Thermocouples, assemblies and parts, which cover most applications encountered in industry are discussed in Bulletin Section 22, issued by Thermo Electric Co., Inc., Fair Lawn, N. J.

☐ **30. LIFT TRUCKS**—Bulletin on Red Arrow single stroke mechanical lift trucks covers six models, capacities 2500 to 5000 lbs.,—trucks being designed in a standard size to fit all skids having 6½, 7½, 9½ and 11½" clearance. Folder on Hydromatic Fluid ram lift trucks also covers six models with capacities up to 8000 lbs. and the same skid specifications. Lift Trucks Inc., 2423 Spring Grove Ave., Cincinnati, Ohio.

☐ **31. MOLDED-EXTRUDED** Rubber—New Molded and Extruded Rubber catalog is designed to simplify the ordering and specifying of rubber products. Contents include standard grommets, bushing, bumpers and "O" rings; numerous extruded shapes; also, condensed SAE—ASTM specification chart for rubber and synthetic rubber products. Continental Rubber Works., Liberty Blvd., Erie, Pa.

☐ **32. TECHNICAL CEMENTS**—Engineers' Production Manual contains 64 pages of useful information, with over 150 illustrations, data and charts. Copy of this practical handbook is available from Sauereisen Cements Co., Sharpsburg Station, Pittsburgh, Pa.

☐ **33. AIR CYLINDERS**—Catalog No. 100, Section 1, covers stationary and rotating air cylinders, and air operated vises. Stationary cylinders are for pushing, lifting, holding, pulling, clamping, turning, squeezing, etc. Logansport Machine Co., Inc., Logansport, Indiana.

☐ **34. TEST CABINETS**—Catalog page covers test cabinets that are used for accelerated testing of the corrosion-resisting qualities of coatings on metal products. Cabinets are used by manufacturers and users of paints, lacquers, and in electroplating plants. Industrial Filter & Pump Mfg. Co., 5900 Ogden Ave., Chicago 50, Ill.

LATEST TRADE LITERATURE

(This is Page 23)

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☐ **35. AUTOMATICS**—New bulletin describes 3-3/4" Model A and 5-3/4" Model A single spindle automatics, which incorporate electric feed drive. With this drive separate, infinitely adjustable feeds can be pre-selected for forward and return motion of each of the five turret stations. The Cleveland Automatic Machine Co., Cincinnati 12, Ohio.

☐ **36. RUBBER PIPE**—Eight-page bulletin H-1 explains the applications and merits of flexible rubber pipe, exploring economies in installation and maintenance costs. Case histories and recommended applications are included. Hewitt Rubber Divn., Hewitt-Robins Inc., 240 Kensington Ave., Buffalo 5, N. Y.

☐ **37. FASTENERS**—92-page catalog No. 50 lists bolts, screws, nuts and washers, U & J bolts, threaded rods, metal stampings, and screw machine products—the last two being made to order. Atlas Screw and Specialty Co. 450 Broome St., New York, N. Y., or 82 St. Paul St., Rochester, N. Y.

☐ **38. VARIABLE SPEED DRIVES**—Book No. 2274, 88 pages, covers P.I.V. variable speed drives, available in 8 sizes and 16 types, in horse powers of ½ to 25, with manual and automatic controls. Diagrams showing applications and photos of P.I.V. installations are featured. Link-Belt Co., 307 No. Michigan Ave., Chicago, Ill.

☐ **39. CONTACT SWITCHES**—Bulletin CS—Contact Switches—employs line drawings and charts to give information relative to sizes, designs and materials available in standard contact blades, lug adapters, and insulating separators. Included are details of Engineer's Kit, which contains working samples of bushing stock, mounting brackets, contact assemblies, fish paper, blades, lifters, etc. Guardian Electric Mfg. Co., 1621 W. Walnut St., Chicago 12, Ill.

☐ **40. SCREENS** — Gyrocentric screens for wet and dry separation of chemicals, plastic powders, crushed rock, abrasives, adhesives, soap powders, refractories, etc., for de-watering liquid recovery processes and other types of separation operations, are described in 24 page brochure issued by the Patterson Foundry & Machine Co., East Liverpool, Ohio.

☐ **41. HUMIDITY TEST** Chambers—Bulletin describes relative humidity test chambers available in standard sizes of 10, 20 and 30 cu. ft. cap., which will automatically maintain humidity conditions from 20% to 95% between 35 deg. F. and 175 deg. F. Bowser Refrigerator Div., Terryville, Conn.

☐ **42. PNEUMATIC TUBE** Systems—Illustrated bulletin SPT-11 describes four interesting modern pneumatic tube installations, for handling small parts, orders, messages etc., and tells how these systems are saving several thousands of dollars in one year over original cost of system. Standard Conveyor Co., North St. Paul 9, Minn.

☐ **43. RETAINING RINGS**—Catalog 4K-W, 8 pages, covers complete line of Truarc retaining rings, grouped according to basic use. Data is given for each ring together with 42 drawings of typical cost saving applications. New special type rings, tools etc. are shown. Waldes Kohinoor, Inc., 47-16 Austel Pl., Long Island City 1, N. Y.

☐ **44. PNEUMATIC CONVEYOR SYSTEM,** Bulk Materials—The Turbo-Drive which transports sand or other flowable materials at low cost is illustrated and described in new bulletin. Ton or more of material can be moved in few

(*Please turn to page 24*)

(*Continued from page* 23)
minutes. Drive is available in three sizes—7, 15 and 30 cu. ft. capacities. Air pressure needed depends upon material, the size of batch, and distance to be moved. Crane Co., 836 South Mich. Ave., Chicago, Ill.

☐ **45. PREPAINT METAL CLEANER**—How new prepaint metal-cleaning material, Oakite Compound No. 33 performs 3 jobs in one operation is discussed in special booklet, which tells how the compound is used in tanks or by hand, (1) removes oil, (2) removes rust, and (3) prepares metal for excellent paint adhesion in single operation. Oakite Products Inc., 154 Thames St., New York 6, N. Y.

☐ **46. FLOOR CLEANING**—"Reducing Floor Cleaning Costs" is title of free reprint available from The Fuller Brush Co., Industrial Divn., 3640 Main St., Hartford 2, Conn.

☐ **47. KIMWIPES** — Sample of Kimwipes and literature explaining how these industrial tissues make for economy in cleaning operations are yours for the asking. Kimwipes are ideal for cleaning precision tools and instruments, and recommended for use on finely finished surfaces. Kimberly-Clark Corp., Neenah, Wis.

☐ **48. WORK GLOVES**—New catalog tells about Riegel work gloves, available in 130 types and styles. Riegel Textile Corp., 342 Madison Ave., New York, N. Y.

☐ **49. OILSTONE FILES**—Folders tell about 200 different sized and shaped India and hard Arkansas oilstone files. Behr-Manning, Troy, N. Y.

☐ **50. METAL FABRICATION**—Book entitled "Science and Skill in Sheet Metals" explains designing, engineering and other services and facilities for developing and producing items in sheet steel or aluminum from enameled washing machine tubs to automotive parts or fruit juicers. Geuder, Paeschke & Frey Co., 1520 W. St. Paul Ave., Milwaukee 3, Wis.

☐ **51. MOTOR STARTERS**—GEA-5153, Section 730-11, tells all about G-E magnetic motor starter, now available from stock in NEMA sizes 0,1,2 and for a-c motors up to 50 hp. General Electric Co., Apparatus Dept., Schenectady 5, N. Y.

LATEST TRADE LITERATURE

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☐ **52. RIVETS**—Price list covers tubular and split rivets which are available in all metals for all industrial needs. American Rivet Co., 849 No. Kedzie Ave., Chicago, Ill.

☐ **53. NAME PLATES**—Book presents name plates in 5000 shapes and sizes for which dies are available. Copy available on letterhead request. Etching Company of America. Dept. C-9, 1520 Montana St., Chicago 14, Ill.

☐ **54. DIE CASTINGS**—Catalog illustrates die casting facilities, services and products of The Electric Auto-Lite Co., Die Casting Divn., 600 So. Michigan Ave., Chicago, Ill.

☐ **55. RELAYS**—24-page catalog gives complete and up-to-date information on full line of relay and electro-mechanical assemblies—150 models for every electrical and electronic application. Potter & Brumfield, 2333 No. Main St., Princeton, Indiana.

☐ **56. STEELS**—Catalog lists 785 sizes, gives thickness, width, hardness, types of edges, weight in pounds per hundred feet, etc.,—strip steels, specialty strip spring steel, etc. Copy available on letterhead request. Sandvik Steel Inc., 111 Eighth Ave., New York 11, N. Y.

☐ **57. CELLULAR RUBBER**—Technical Bulletin on Spongex cellular rubber tells about its use in solving vibration, insulation, cushioning, gasketing, sealing or sound damping problems. It is available in molded shape or die cut form—or in sheets, slabs, strip, cord, tubing or bonded to metal or fabric. The Sponge Rubber Products Co., 304 Derby Place, Shelton, Conn.

☐ **58. TAPS**—Conversion table of Standard Tap Catalog Numbers, showing all standard types and styles of American Manufacturers cross referenced by catalog number, will be sent to you by Threadwell Tap & Die Co., Greenfield, Mass.

☐ **59. V-DRIVES**—Bulletin lists 15 money-saving features of Worthington Multi-V-Drives seven of which are exclusive Worthington Pump & Machinery Corp., Multi-V-Drive Sales Divn., Dept. PO-1, Buffalo, N. Y.

☐ **60. SNATCH BLOCKS**—Catalog details utility snatch blocks—blocks that any man can rig in five seconds without a wrench; no loose parts; nothing to drop or lose. Catalog shows wire rope blocks 1½ to 250 tons. American Hoist & Derrick Co., St. Paul 1, Minn.

☐ **61. AGGREGATE SCREENS**—Catalog W-903 details aggregate screens, featuring the Roeflat for maximum wearing surface and accurate sizing, the Roeton for increased capacity, and the Roeslot for topmost screening capacity. Woven Wire Fabrics Divn., John A. Roebling's Sons Co., Roebling, N. J.

☐ **62. ROLLER CHAINS**—Bulletin 50-6 gives all the facts on "BA" (Baldwin Assembly) riveted roller chain, explaining its advantages and long life. Chain Belt Co., Baldwin-Duckworth Divn., 366 Plainfield St., Springfield 2, Mass.

☐ **63. WIRE ROPE SLINGS**—Bulletin No. FLS-49 describes in detail Hercules flat-laced wire rope slings. A. Leschen & Sons Rope Co., 5009 Kennerly Ave., St. Louis, Mo.

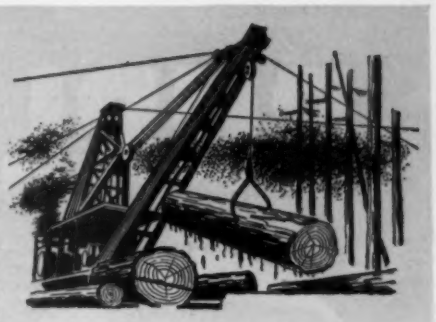
☐ **64. ROLLER CHAINS & PARTS**—Catalog insert F-57-50 lists packaged quantities and package weights, and list prices of factory packaged roller chains and parts. Morse Chain Co., 7601 Central Ave., Detroit 8, Mich.

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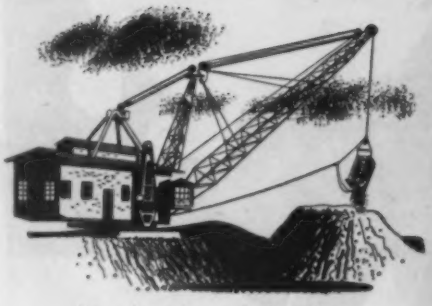
For better service use the right rope



For rotary drilling,
*PRE*formed, Internally Lubricated wire line designed to wind smoothly on drums and to withstand abrasion from running through blocks.

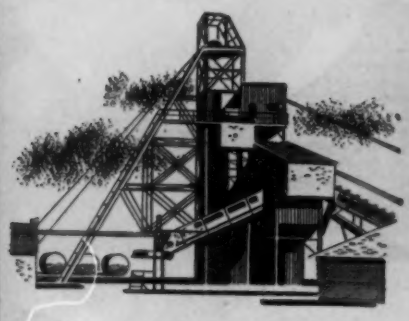


For logging operations,
tough flexible ropes for tractor arch lines, chokers, skidders and loading.

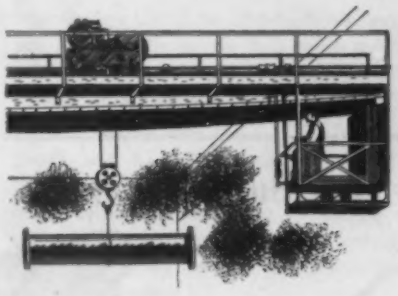


For shovels and draglines,
ropes for different sizes and types of equipment designed to give best service for your particular needs.

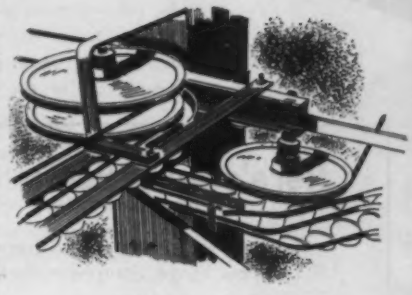
The right rope for each job is available from



For shaft mining,
shallow or deep, internally lubricated ropes to meet all load and speed requirements.



For cranes and hoists,
small or large, *PRE*formed Internally Lubricated wire ropes of the correct size and flexibility for each use.



For can conveyors,
there are bright carbon steel, stainless steel and monel metal wire ropes to meet various service conditions.

A thousand and one
MACWHYTE
Internally Lubricated
WIRE ROPES

It pays to choose the right rope for your equipment

Besides the ropes listed above, Macwhyte makes many more such as cable tool drilling lines, elevator cables, incline or haulage ropes, scraper ropes, aircraft control cable assemblies, ropes for ship rigging and guying work, as well as hundreds of sizes and types of single-part, round-braided or flat-braided slings for material handling.

To get the best service, keep down maintenance costs, and *save wire rope dollars,* call your Macwhyte distributor or write direct to Macwhyte Company for recommendations. Catalog on request.

MACWHYTE WIRE ROPE

MACWHYTE COMPANY 2918 Fourteenth Avenue, Kenosha, Wisconsin Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mill depots carry stocks for immediate delivery. Mill Depots: New York • Pittsburgh • Chicago Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles

BURLAP G.H.Q.

BEMIS

Burlap general headquarters will prove to be the dependable, convenient, ready-to-ship source for your burlap piece goods requirements, whether you need a bale or several carloads . . . and whether you want the famous Angus that only Bemis imports, or one of the standard grades.

Bemis is Your Best Source for These, Too . . . Paper furniture covers—Cotton yard goods—Paper tubing for chair legs, etc.—Tite-fit Tubing—Mailing bags and bags for small parts—Canvas covers.

Here's why Bemis is your Burlap G. H. Q.

- Largest importer — You benefit from our large, complete stocks.
- Experience — Producers and users alike accept Bemis' grading of Indian burlap as the standard for the industry. You benefit from our knowledge of quality.
- Facilities — 16 plants and 15 additional sales offices, strategically located, assure a dependable source of supply and prompt service.



Bemis *"America's No. 1 Bag Maker"*

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Cleveland • Denver
Detroit • Houston • Indianapolis • Jacksonville, Fla. • Kansas City • Los Angeles • Louisville
Memphis • Minneapolis • New Orleans • New York City • Norfolk • Oklahoma City • Omaha
Phoenix • Pittsburgh • St. Louis • Salina • Salt Lake City • San Francisco • Seattle • Wichita

Want Additional Product Information? See Page 19.

your Spang CW distributor believes...

That good service pays



Your Spang CW Pipe Distributor makes your problems his when you call him. He knows that good, quick service means satisfied, lasting customers. And he's more than willing to go out of his way to see that you get prompt, efficient service in emergencies.

He also knows that it pays to handle products of fine quality. That's why he stocks and recommends Spang CW Pipe. He knows that Spang CW gives long, trouble-free service. One of the reasons why this is true is because of the final finishing and descaling operations in its manufacture. This assures a smooth, scale-free inside surface that minimizes dangerous and costly valve clogging.

For dependable, quick service call your Spang CW Pipe Distributor the next time you need steel pipe, fittings, fixtures, valves or other piping materials. You'll like his philosophy . . . *good service pays.*

SPANG-CHALFANT

Division of The National Supply Company

EXECUTIVE OFFICES: PITTSBURGH, PA.

District Sales Offices: Atlanta; Boston; Detroit; Houston; Los Angeles; New York; Philadelphia; Pittsburgh; St. Louis

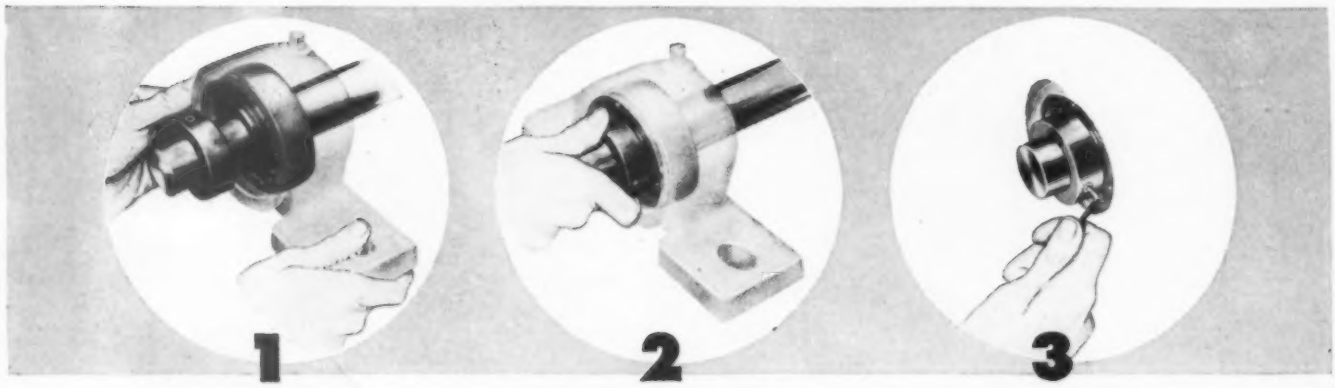
SPANG CW

QUALITY *that is recognized wherever pipe is used*



Want Additional Product Information? See Page 19.

Some still say:
"It can't be that simple"



To those who have struggled with shaft shoulders, lock nuts, adapter sleeves and other gadgets for holding a bearing to a shaft it is understandable why some still say: "It can't be that simple", when they see how easy a Fafnir Wide Inner Ring Ball Bearing with the famous Self-Locking Collar slides on and fastens to a shaft.

If you believe that "seeing is believing" try Fafnir Ball Bearing Power Transmission Units on your next installation. We'll let you judge for yourself.

To make it simple for you, a nearby Fafnir Distributor will supply the units best suited for your requirements. The Fafnir Bearing Company, New Britain, Conn.

It's this simple

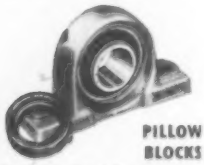
1
Slip it over the shaft.

2
Engage and turn the collar.

3
Set the screw.

that's all

FAFNIR BALL BEARING POWER TRANSMISSION UNITS
Self-aligning. Sealed for long, uninterrupted service. A type and size for every condition.



PILLOW BLOCKS
Mechani-Seal Type. Two Series: Light and Heavy



PILLOW BLOCKS
With labyrinth seals, and single or double dirt guards. Two Series: Standard and Heavy



RUBBER MOUNTED UNITS
Pillow Blocks
Flange Cartridges

FAFNIR
BALL BEARINGS

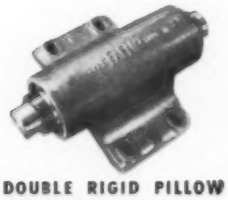
MOST COMPLETE LINE IN AMERICA



FLANGE CARTRIDGES
Mechani-Seal Type. Two Series: Light and Heavy



PILLOW BLOCKS Fixed and Floating Types. Two Series: Standard and Heavy



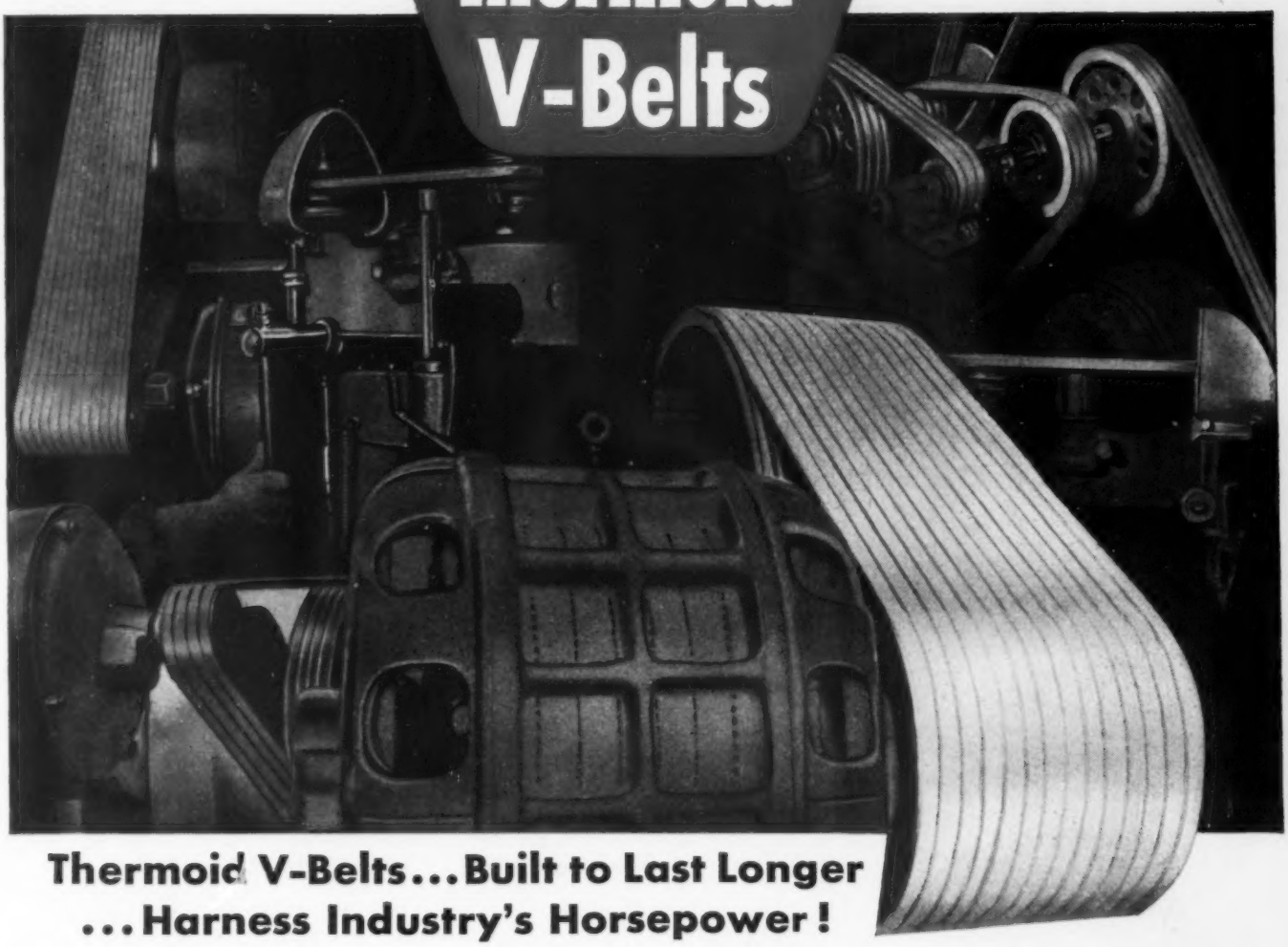
DOUBLE RIGID PILLOW BLOCKS Heavy Duty



FLANGETTE
With pressed steel flanges

Want Additional Product Information? See Page 19.

Specify Thermoid V-Belts



Thermoid V-Belts... Built to Last Longer ...Harness Industry's Horsepower!

From the smallest fractional horsepower size to the largest multiple V-Belt . . . Thermoid top-quality serves the needs of every industry. Thermoid V-Belts mean longer-than-average wear, maximum power transmission without slippage and lowest over-all operating costs.

Thermoid V-Belts are specially impregnated to withstand excess moisture . . . abrasion . . . acidity . . . all those elements that hasten belt deterioration. *They are prestretched to insure perfect operation without adjustments.*

For smooth, efficient performance . . . for ability to absorb repeated shock loads . . . for lowest cost per hour . . . specify Thermoid V-Belts. Call your nearest Thermoid Distributor today. He has a complete range of sizes available to meet your requirements. And for your special belt problems, Thermoid Field Representatives are always available to help you select the right belt for the job.

It will pay you to *Specify* Thermoid

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

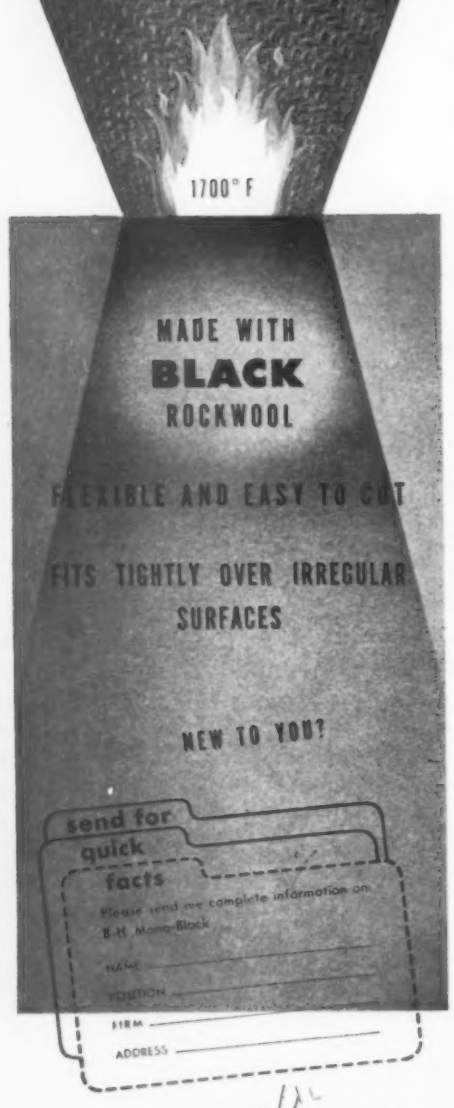
Thermoid Company

Main Offices and Factory · Trenton, N. J., U. S. A.
Western Offices and Factory · Nephi, Utah, U. S. A.
Industrial Rubber Products · Friction Materials · Oil Field Products

THE ONE-BLOCK INSULATION

BH

MONO-BLOCK



BALDWIN-HILL COMPANY

401 BREUNIG AVE. TRENTON 2, NEW JERSEY

F.O.B. filosofy of buying

THE Inquiring Reporter of the New York *Post* recently went out on his sidewalk rounds with the question: "If you suddenly acquired $50,000, what would you do with it?" And, among others, he addressed his inquiry to—of all people—a purchasing agent! And what would a purchasing agent do about spending fifty grand? P.A. Leon Feinberg's reply is quoted as follows: "I'd buy a stable of horses, groom them into racers, and let the other fellows bet on them and lose their money. I've bet them long enough and lost money; I'd like to make some for a change."

Well, we have always contended that speculation has no place in a purchasing program.

• •

FROM time to time we have reported in this column some of the more unusual titles under which a purchasing agent operates. Here's one that is new to us, from the Chance-Vought Division of United Aircraft Corporation: *Fixed Assets Acquisition Supervisor.*

• •

STATE Purchasing Agent H. N. McDaniel of New Mexico modestly claims a place on the "best seller list" for his latest publication. It is a 103-page tabulation of the firms that sold the state nearly nine million dollars worth of equipment and supplies during the past fiscal year—the "best sellers" on his purchase ledger.

• •

ALSO from New Mexico comes an interesting item concerning the legal complications entailed in purchasing policy. The State Comptroller recently recommended that the State P.A. buy all supplies on an annual contract basis to save money—then countermanded the proposal when he belatedly discovered that state law forbids any public agency to incur expenses or indebtedness in excess of a six months appropriation, a statutory requirement that would automatically have made any one-year contracts illegal.

• •

NEWSPAPERS in Binghamton, N. Y., have had some mild fun over the fact that the purchasing agent for Link Aviation in that city is aptly named—Marshall B. Bird. The jest acquired additional point, and the P.A. really "got the bird" one recent evening when he repaired to a school playground to indulge his hobby of flying his gasoline-powered model plane. The flight started uneventfully, but presently a couple of curious hawks got a little too close to the brightly colored craft and couldn't put on the brakes, so that a head-on crash resulted. The casualties: one hawk, with a broken neck, and one model plane, with damaged prop, wing, and landing gear.

• •



WE could almost have predicted that with the recurring shortage in steel sheet, resourceful P.A. Clem Caditz of Northern Metal Products Co., Chicago, would break out with another of those unique, whimsical, and effective appeals for aid that he sends to potential suppliers in times of distress. Several of his previous gems of persuasion have been reproduced in these pages in times past, and we welcome

Want Additional Product Information? See Page 19.

the opportunity to pass along the latest of the series. This one arrived the other day, accompanied by a 5-inch square of steel bearing the familiar USS factory stamp. The plaintive communication reads as follows:

"My psychiatrist tells me I'll go crazy unless I take my mind off this steel situation.

His professional advice was that I take up a hobby. He recommended collecting stamps.

I am taking his advice.

Do you know where I could lay my hands on a sizeable number of the stamp enclosed? It's a scarce issue. I'd like to buy them imprinted on sheets about thirty-five thousandths thick.

I'm sure my friends will help me carry out my doctor's orders. Won't they?

Sincerely,
C. C. Caditz"

• •

WITH delivery time lengthening on a wide range of products, now quoted in months instead of weeks, it is encouraging to note that an order placed by the Army-Navy Purchasing Agency with the Schenley Laboratories of Lawrenceburg, Ind., calling for 105 billion units of penicillin for use at the Korean battle front, was shipped in less than four days.

• •

THE changing supply and price situation has placed a new interpretation on what constitutes a reasonable time for acceptance of a bid. One purchasing agent reports that the majority of bids now being received set a one to five day limit, and some call for immediate acceptance by wire, collect.

• •

UNUSUAL news item from Birmingham: When the job of furnishing the new City Hall was undertaken, a special committee of three personal representatives of the Mayor and Commissioners was assigned to the project. They found it fascinating in the early stages, but as the October 1 deadline approached they saw the need for professional help. At their unanimous request, City Purchasing Agent C. E. Wiberg was added to the committee.

PACKAGED BRASS AND STEEL SHIM STOCK

Ready for instant use without fumbling or waste

Packaged shim stock means *convenience!* No clumsy handling or spoilage of large bulky sheets or rolls. In our dispensing cartons and packets the stock is always protected, yet always available for immediate use. Just pull the length you need out of the carton slot—and snip it off. Saves time, saves space!

There's a handy carton, packet or rack designed for your requirements by the makers of the famous LAMINUM Shims



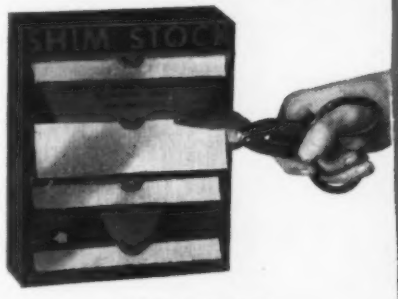
RUGGED CARTON DISPENSERS

6 x 100 inch rolls in metal-edged cartons. Stock feeds through carton slot, as required. No re-rolling, no ruined stock. Available in 11 gauges: .001, .0015, .002, .003, .004, .005, .006, .007, .008, .009 and .010 inch.



STURDY FLAT PACKETS

Two 6 x 25 inch sheets to the envelope. The heavier gauges – which do not roll easily—are supplied in special protecting flat packets: .012, .015, .020, .025 and .032 inch.



THE 4-GAUGE ECONOMY CARTON

Four 6 x 50 inch rolls in one carton. The utility unit, containing the four most popular gauges: .001, .002, .003 and .005 inch. The same first quality brass or steel shim stock.

THE METAL DISPENSING RACK

Holds the four gauges of your choice. Pick the four gauges you use the most. Rack is designed to hold the 6 x 100 inch carton dispensers. Sets on bench or hangs on wall.



Check with your industrial distributor!

LAMINATED SHIM COMPANY, INC.

2410 UNION STREET GLENBROOK, CONN.

SHIM STOCK



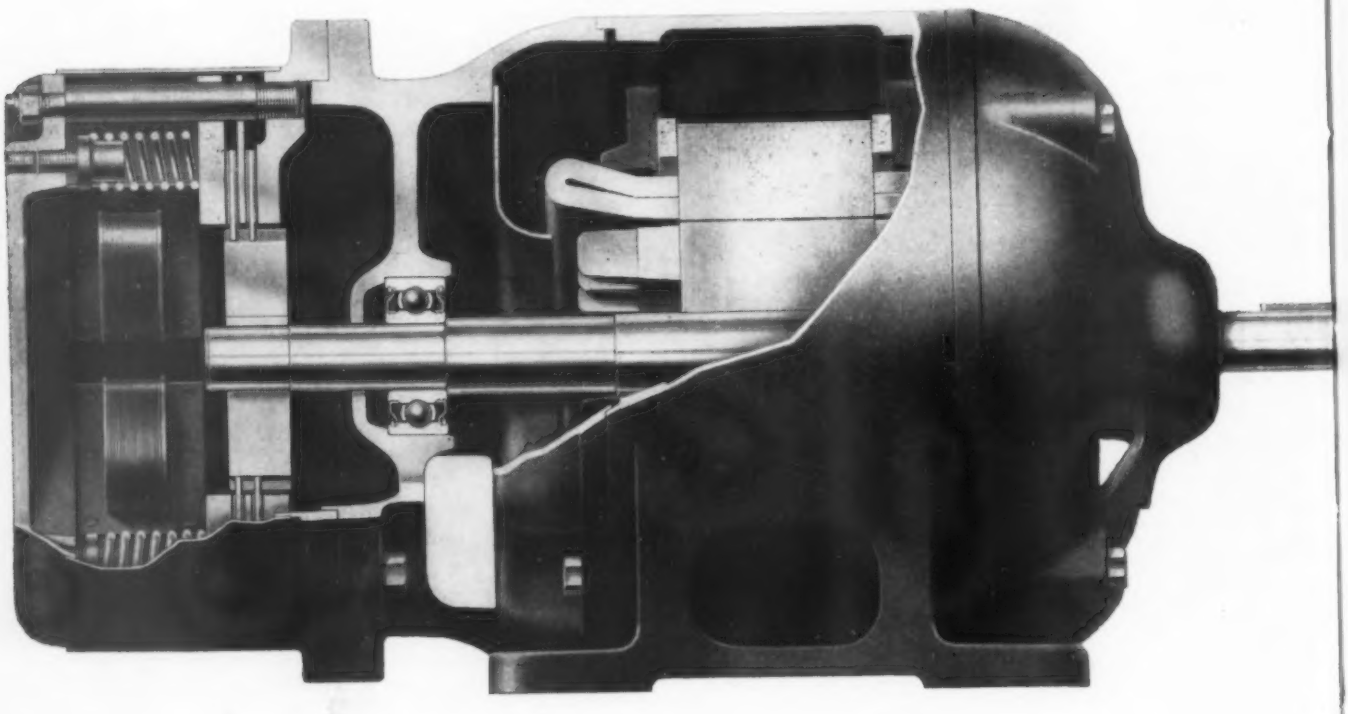




STAMPINGS CUSTOM SHIMS AN·COR·LOX NUTS

NEW! MONEY-SAVING CROCKER-WHEELER BRAKE

No Other Brake Like This!

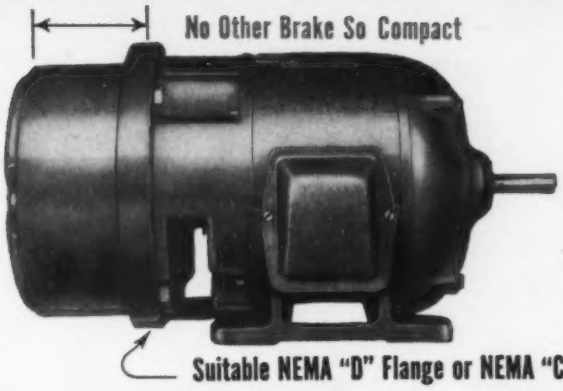


Now—from the pioneer in motor improvements comes a Brake Motor engineered a step ahead of any in its field...to bring you maintenance savings never before possible!

Here's the Brake Motor by which all others will be measured! From wear-resistant brake linings of bonded metal to the compact dimension of its totally-enclosed brake, this new motor is another Crocker-Wheeler *dollar-saver.*

Check these exclusive features—every one engineered to cut operating, maintenance and replacement costs. Bonded metal brake linings practically eliminate the need for adjustments, outlast others 3 to 1. Brake adjustments, if necessary, may be made from the outside. Rotating disc and lining can be replaced for less than cost of equivalent replacement in old-style brakes. Automatic re-set hand release supplied as an extra when specified.

With its short overall mounting dimension, the brake can be used where space is limited. Brake unit is available for separate mounting—the only brake that can be attached to a standard double shaft D flange motor for frames 203-326 or C face motor for frames 364-405. Get all the facts on the many money-saving features of the new C-W Brakemotor. Send today for new Bulletin. Simply mail the coupon on the opposite page.



MOTOR

No other Brake Motor has all these features to cut your operating and maintenance costs

- *Bonded metal brake linings — for greater wear resistance. All-metal construction practically eliminates adjustments and replacements.
- All brakes totally enclosed for added protection.
- *No torque or lining wear adjustment necessary on #11 or #11A brakes.
- Large diameter brake spline with large number of teeth decreases load per tooth . . . increases life of spline and rotating discs.
- Brake lining wear adjustments (*if necessary*) can be made from *outside*. No need to remove cover or posts.
- *Short overall mounting dimension. C-W Brake is compact—an advantage in fitting motor into tight places.
- Simple wrap-around band cover. No room needed at end of brake for cover removal, as with covers that slide off and so require clearance.
- Torque elements close to mounting flange eliminate difficulties often encountered with overhung brakes. No possibility of excessive bearing stresses or weakened shaft support under loads, as can happen when braking force is at the end of shaft, away from bearing
- Brake leads are brought into the motor conduit box so that they can be connected in motor circuit or energized separately. Saves wiring trouble in original installation.
- Magnets and springs symmetrically spaced for equalized pressure and low brake lining wear.
- *Brake unit can be mounted on suitable NEMA standard D flange (frames 203-326) or C face (frames 364-405) motors (with double shaft extensions). No special mounting brackets or adapters required.

*Exclusive on the Crocker-Wheeler Brake Motor.

ELLIOTT COMPANY

CROCKER-WHEELER DIVISION,

BRANCH OFFICES: Atlanta, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Kansas City, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Newark, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle, Tulsa, Washington, Wilmington. Representatives in principal cities.

AMPERE, N.J.


Sealedpower Motors


Protected-Type Motors


Wound-Rotor Motors


Direct-Current Motors



Elliott motors and generators larger than the Crocker-Wheeler line are built by the Ridgway Division at Ridgway, Pa.

Elliott Company, Advertising Dept., Jeannette, Pa.

Please send new Bulletin SL-610-1, describing Crocker-Wheeler Brake Motors.

P-450

Name.....

Title or Function.....

Company.....

Address.....

Big machine versatility at small machine cost



STANLEY-CARTER R5A
1 H.P. PORTABLE ROUTER

Any kind of routing, cutting out, edging, recessing, paneling you want . . . on the piece, sub- or complete assembly . . at a flick of the switch. Plenty of speed and power in this full h.p., 18,000 r.p.m. portable router. Easy to use . . . lightweight; low center of gravity; simple, accurate depth adjustment; handy gauges and templet guides. Long life and minimum upkeep . . . large heat treated shaft, oversize ball bearings, specially designed end-shield protection for motor. Wide assortment of bits, accessories and attachments available give the R5A an amazing range of usefulness.

STANLEY

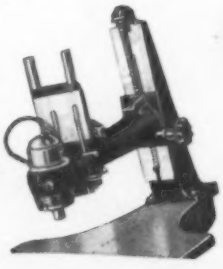
This trade mark on electric tools tells you the most important thing you want to know about tools

When you buy an electric tool you have to take somebody's word about gears, motor, bearings, shaft, switches, power, etc. Whose word about tools could be more reliable than the word of "Stanley" . . . tool makers for over 100 years. On electric tools the name, Stanley, means that the tools are quality built, thoroughly tested and honestly rated. Covered by a generous guarantee and serviced by a network of Stanley Service Stations. See your industrial distributor or write for complete catalog. Stanley Electric Tools, 506 Myrtle Street, New Britain, Connecticut.

STANLEY
Reg. U.S. Pat. Off.
Hardware • Tools
Electric Tools
Steel Strapping • Steel



No. 92 heavy duty 9" sander and grinder. Full ball bearing construction, precision gearing and dynamically balanced armature. Compact, rugged, powerful.



OR55A-1 heavy duty overarm router. Combination router and shaper for high speed production work. Full 1 h.p., 18,000 r.p.m. motor.

mirror Magic!



You've got a bit of growin' to do, sonny. It takes lots of skill, training, and experience to be a good fighter, to be a good salesman. Chase Salesmen are thoroughly trained experts in the bag business . . . as it applies to your business. They are supported by more than one hundred years of experience in supplying better bags for American industry and agriculture. Do you want better protection? Do you want improved appearance? Do you want a container that is designed for your specific needs? All these important points add up to increased sales! Check with us today. Your Chase Salesman will promptly contact you . . . and you'll be glad he did!

Bags for all industry and agriculture

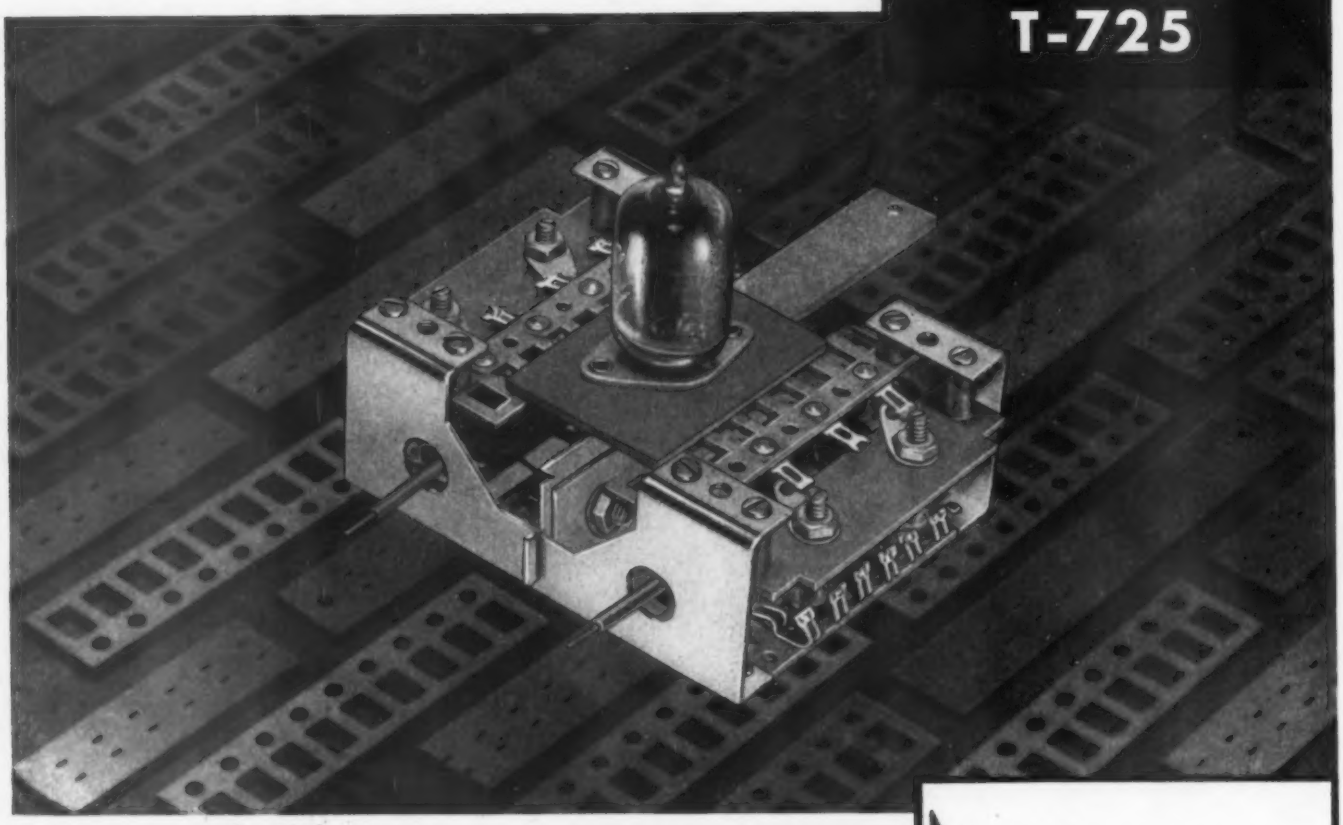
- cotton bags of all kinds
- Topmill burlap bags
- paper & Multiwall bags
- Saxolin open mesh bags
- combination bags, liners, and specialties.

CHASE SINCE 1847 BAGS

CHASE BAG CO. GENERAL SALES OFFICES, 309 WEST JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • HUTCHINSON, KAN. • CROSSETT, ARK • SAN FRANCISCO

Another "DESIGN HEADACHE" solved by INSUROK* T-725



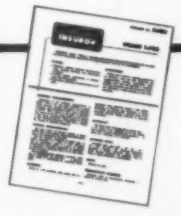
Centralab† required a superior combination in the insulation for this unique slide switch used in Anchor Radio's TV preamplifier

At the high frequencies encountered in TV equipment, insulating materials must possess a unique combination of many properties. To find such a material for its intricate slide switches, used in Anchor Radio's TV preamplifier, was the problem faced by Centralab engineers.

INSUROK T-725 laminated plastic insulation proved to be the answer. It had the necessary physical strength and electrical properties. It was stable under elevated temperatures and high humidity. And, from piece to piece, it remained uniform.

In hundreds of similar applications, laminated and molded INSUROK are solving difficult problems for industry. Richardson's years of experience in the engineering application of plastics are available to you without obligation. Write, today.

1. Uniform quality
2. Low electrical loss
3. Resistance to moisture
4. Electrical stability over a wide temperature range
5. Mechanical strength
6. Close tolerances



Write for
Descriptive
Data Sheet T-725

*Reg. U. S. Pat. Off.

†DIVISION OF GLOBE-UNION INC., MILWAUKEE

The RICHARDSON COMPANY

FOUNDED IN 1858—LOCKLAND, OHIO
2791 Lake St., Melrose Park, Illinois (Chicago District)

SALES OFFICES: CLEVELAND • DETROIT
INDIANAPOLIS • LOCKLAND, OHIO • MILWAUKEE
NEW BRUNSWICK, (N. J.) • NEW YORK
PHILADELPHIA • ROCHESTER • ST. LOUIS

Want Additional Product Information? See Page 19.



LYON

Number One supplier of STEEL EQUIPMENT to the Nation's Industries and Institutions

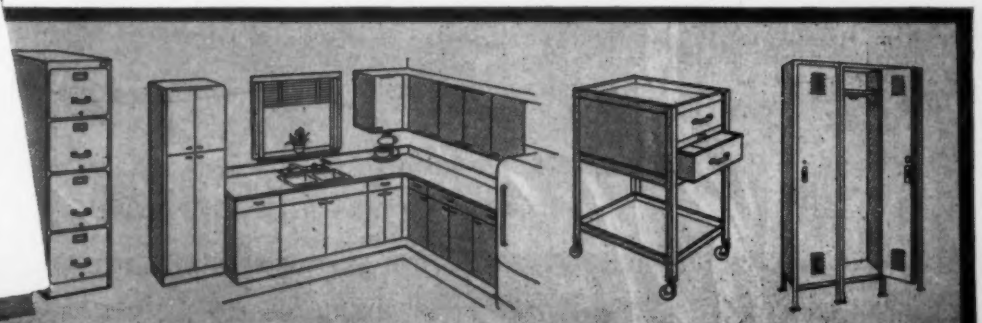
LYON METAL PRODUCTS, INCORPORATED

General Offices: 1033 Monroe Avenue, Aurora, Illinois

Factories: AURORA, ILLINOIS • YORK, PENNSYLVANIA

Sold Nationally through Factory Branches and Dealers

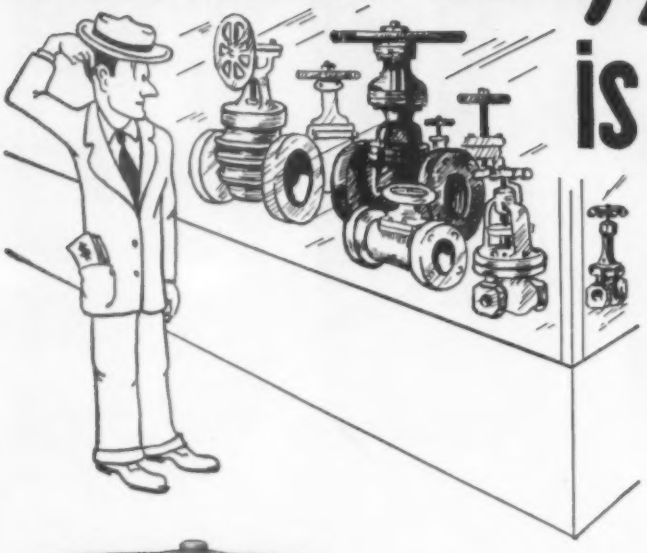
We're glad to announce that our new YORK, PA. plant is now in operation



A PARTIAL LIST OF LYON PRODUCTS

• Shelving	• Kitchen Cabinets	• Conveyors	• Economy Locker Racks	• Display Equipment	• Filing Cabinets	• Service Carts	• Tool Stands
• Lockers	• Cabinet Benches	• Bar Racks	• Flat Drawer Files	• Drawing Tables	• Folding Chairs	• Sorting Files	• Shop Boxes
• Stools	• Storage Cabinets	• Tool Boxes	• Toolroom Equipment	• Revolving Bins	• Work Benches	• Drawer Units	• Tool Trays
• Bin Units	• Welding Benches	• Parts Cases	• Wood Working Benches	• Hanging Cabinets	• Bench Drawers	• Hopper Bins	• Shop Desks

"Window Shopping" for Valves is poor economy



Reading advertisements is like "window shopping"—it's a good way to see what's on the market. But don't let it influence you into buying your flow control equipment from different sources.

Because if you buy all your valves from one source you avoid these pitfalls:

Complications in stocking spare valve parts.

Difficulties that confront the maintenance department in making repairs on a variety of valves.

The necessity of carrying a much larger stock of repair parts.

The chances of installing valves that are not backed by adequate engineering service.

By offering the *only* COMPLETE line of valves available to Industry today, Powell makes this possible. And if you consult Powell Engineers and select the right valve to suit each individual service, your flow control problems are ended.



Fig. 1793 — Large 125-pound Iron Body Bronze Mounted Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem and tapered solid wedge.



Fig. 1872 — Bronze Solder Joint Globe Valve. Regrindable, renewable, hard-wearing "Powellium" nickel-bronze seat and disc. A complete line of Solder Joint Globe, Angle, Gate and Check Valves available. Write for our new circular—**"Powell Bronze Solder Joint Valves."**



Fig. 1847—200-pound Stainless Steel Swing Check Valve. Screwed ends, screwed-in cap and regrindable, renewable disc.

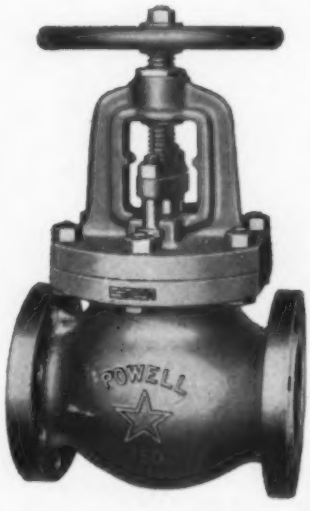


Fig. 1531—Class 150-pound Cast Steel Globe Valve with flanged ends, bolted flanged yoke, outside screw rising stem.

The Complete Powell Line includes Globe, Angle, "Y", Gate, Check, Non-return, Relief and Flush Bottom Tank Valves in Bronze, Iron, Steel and a wide range of Corrosion-resistant metals and alloys.

Ask your nearest Distributor—or write direct

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

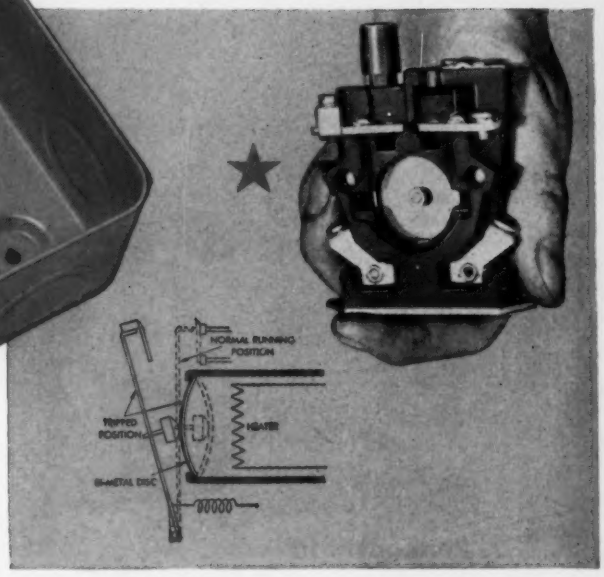
POWELL VALVES

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



CUT MOTOR BURNOUTS



with the *Life-Linestarter**

. . . positive protection against overloads

Stop worrying about the inconsistencies of ordinary overload relays.

Investigate the new Westinghouse Life-Linestarter with the bi-metal DISC overload relay which provides a positive contact pressure, with snap action. It retains its precise calibration regardless of the number of operations. It's the only relay that may be set for "automatic", "hand" or "no-stop" operation.

Positive protection is but one of the advanced features offered by the new Life-Linestarter. It's best because of its uniformity and completeness of line (NEMA sizes 0 through 4, to 100 hp, 600 volts), superior performance, ease of installation and other cost-saving advantages.

**Trade Mark*

Ask your nearby Westinghouse representative for the "inside story"—a Trans-Vision presentation—at your convenience. Or write for booklet B-4677. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-30024

Westinghouse

Life-Linestarter

WESTINGHOUSE

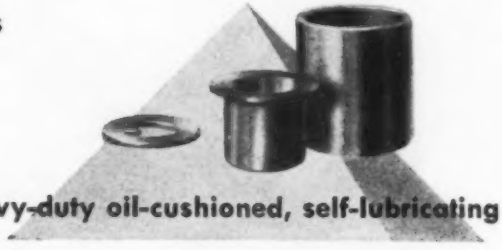
TOMORROW'S STARTER—**TODAY!**

Want Additional Product Information? See Page 19.

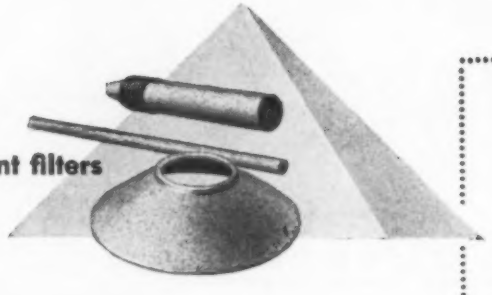
Customers state... Oilite Products yield pyramidal savings...



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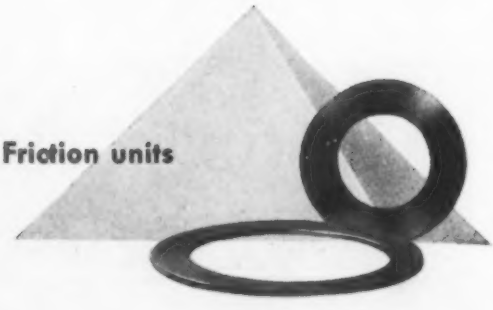
2. Heavy-duty oil-cushioned, self-lubricating bearings



3. Permanent filters



4. Heavy-duty oil-cushioned, self-lubricating cored and bar stock



5. Friction units

Contact your local Oilite field engineer or the home office

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Amplex MANUFACTURING COMPANY

SUBSIDIARY OF CHRYSLER CORPORATION
DETROIT 31, MICHIGAN



answer to "difficult" design problems:

Molded rubber parts engineered for mass production

WHEN faced with the problem of designing parts where rubber's unique characteristics provide the only answer, engineers are turning more and more to Goodyear—for the following reasons:

Universal experience—as the world's largest rubber company Goodyear has far greater technical knowledge in molding rubber and the new rubber-like plastics to meet your exact requirements in specific gravity, elongation, tear, hardness, shear, tensile, and resistance to temperature extremes, abrasion and chemicals.

Superior facilities—the Goodyear molded rubber plant at St. Marys, Ohio, is the largest and most modern in the industry. It has complete equipment to produce in quantities required to keep your production line going at capacity—at low cost per unit.

Quality control—advanced production techniques, rigid inspection and control at every step insure exact uniformity of parts in quality and performance to meet your design specifications.

If you have a design problem in rubber, consult the G.T.M.—Goodyear Technical Man—or write direct to:

Goodyear, Molded Goods Dept.,
St. Marys, Ohio.

GOODYEAR

THE GREATEST NAME IN RUBBER

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"Get a

SIMONDS SAW

Job-designed

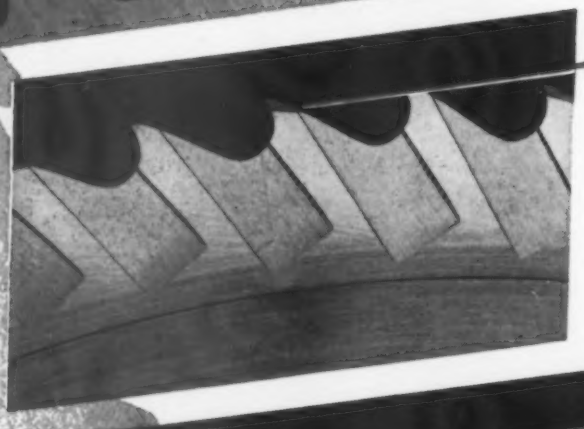
for fast, low-cost Cold Cutting"





Inserted Tooth Saws

Full high-speed steel teeth for long wear, securely held in a tough alloy steel plate, make this the top production saw for heavy duty cutting. The teeth hold their cutting edges at high temperatures, permitting feeds of nearly double those of solid saws on ferrous and non-ferrous metals. All teeth are perfectly ground to side, top and down clearances, and are easily replaced.



Segmental Saws

Combining solid-tooth thinness with inserted-tooth economy, this saw leaves a remarkably smooth finish. In finer teeth, possible with this design, it is especially effective cutting thin-walled sections. Alternate square and beveled fitting splits the chips three ways for easier cutting. Available with carbide-tipped teeth.



Solid Tooth Saws

Made of semi-high-speed and high-speed steels (in diameters 16" and under), these saws are heat-treated for maximum edge-holding properties combined with toughness. They are radially ground on special machines for perfect side clearance.

Simonds also makes saws of high-speed, semi-high-speed and T-11 (patented) steels to operate at higher speeds for cutting non-ferrous metals.

SIMONDS
SAW AND STEEL CO.

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Branch Offices in Boston, Chicago, Los Angeles, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.

Call STERLING BOLT FOR Machine Bolts

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Steel or
Brass



...and for all other metal fastening needs

Whether you need machine bolts or any of the hundreds of other items in our full line of metal fastenings, the quickest, easiest, most efficient way for you to fill your requirements is to call Sterling Bolt. • It is to your advantage to use "Sterling Bolt One-Source Service" by listing *all your metal fastening needs* on one order. The benefits of One-Source Service are cumulative—convenience and efficiency in ordering, savings resulting from reduction in personnel time and paper work, and security in the knowledge that the right fastenings will be delivered to the right place at the right time. Whatever your metal fastening needs . . .



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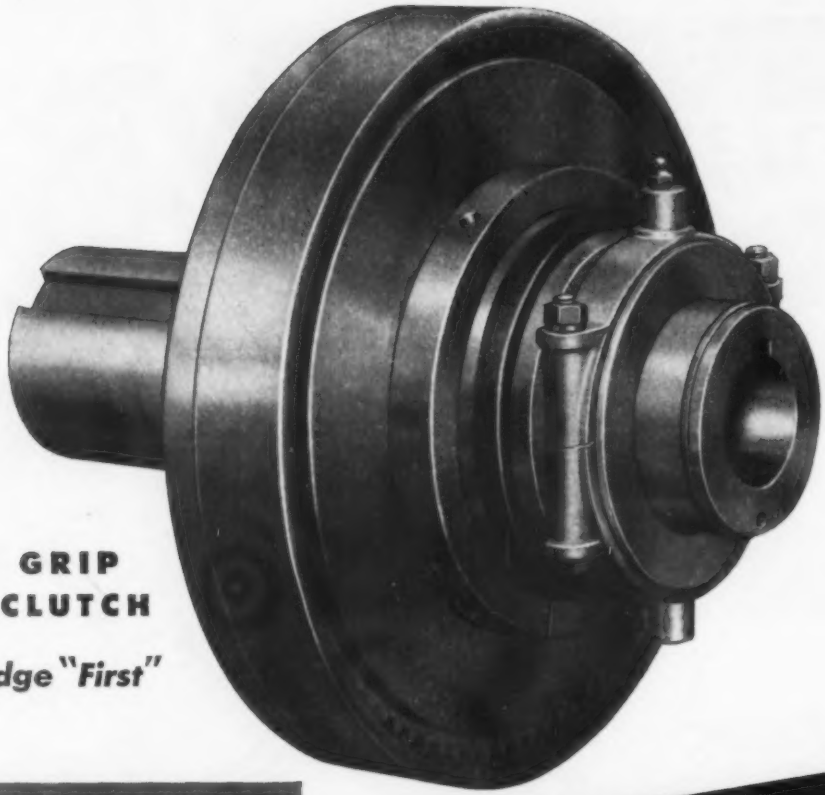
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ROLLING GRIP FRICTION CLUTCH

—another Dodge "First"

It's Compact—

It's Flexible—

It's Smooth—

NO TOGGLES!

New and simplified design results in new ease of control, together with positive drive and extreme ruggedness. Dodge Rolling Grip Friction Clutches provide trouble-free, dependable service on many thousands of industry's tough installations.

There are no toggles! Instead, the mechanism shifts smoothly on hardened steel balls—and has the positive grip of a wedge. Operating parts are completely enclosed for safety, yet quickly accessible for service.

Dodge Rolling Grip Friction Clutches are available from distributors' stocks in two types—Bolted Plate and Gear Tooth Mechanism—for service ranging from light machinery with smooth power source to heavier loads, in a range from ⅓ H.P. to 21 H.P. at 100 R.P.M. Selection of the right size is easily arrived at from Dodge Selection Tables. For complete data, including tables, call your Dodge Distributor or write us.

Call the Transmissioneer, your local Dodge Distributor. He's factory-trained to help solve your power-drive problems. He has information on latest transmission developments. Look for his name under "Power Transmission Machinery" in your classified telephone directory.



DODGE MANUFACTURING CORPORATION, 1300 Union Street, Mishawaka, Indiana

DODGE

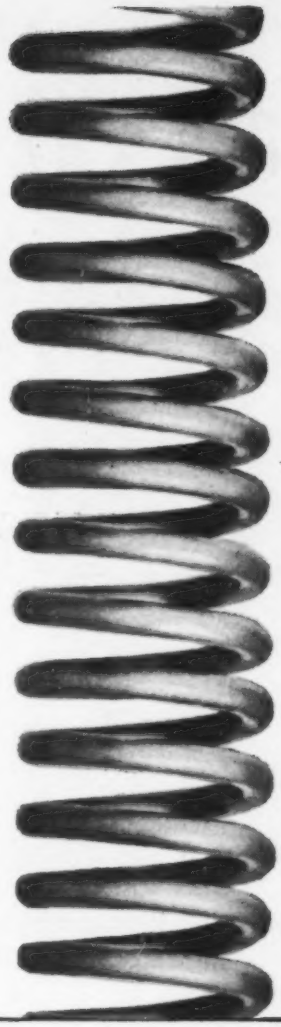
of Mishawaka, Ind.

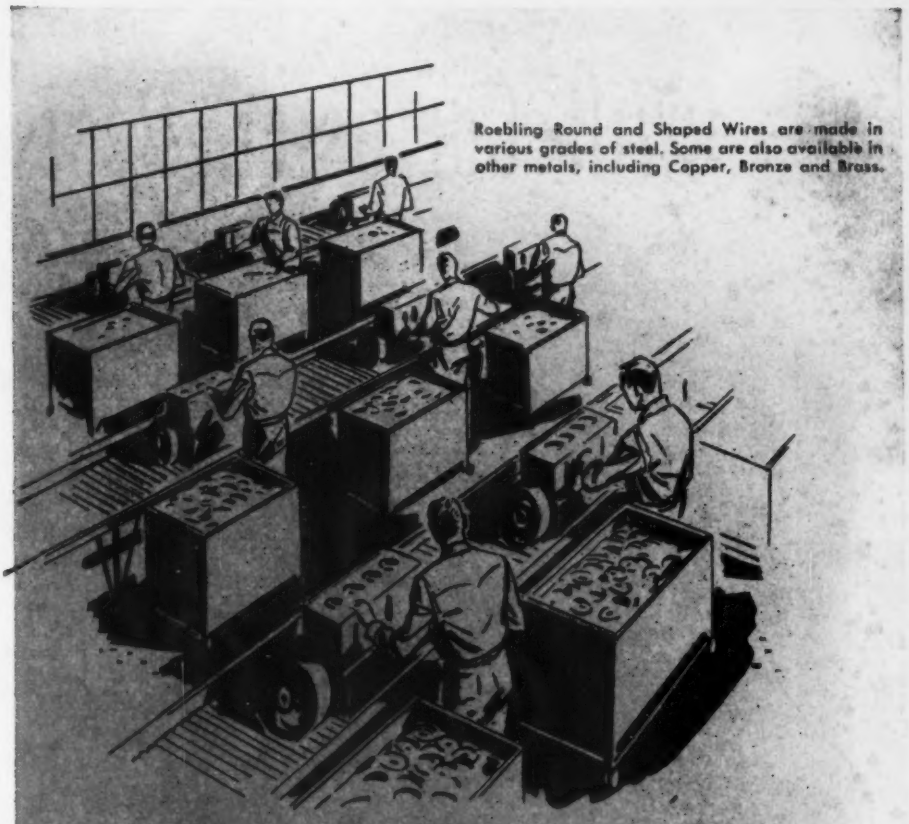
FIRST IN POWER TRANSMISSION MACHINERY

NAME PLATES

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY, ETCHING COMPANY OF AMERICA, 1520 MONTANA STREET, CHICAGO 14, ILLINOIS

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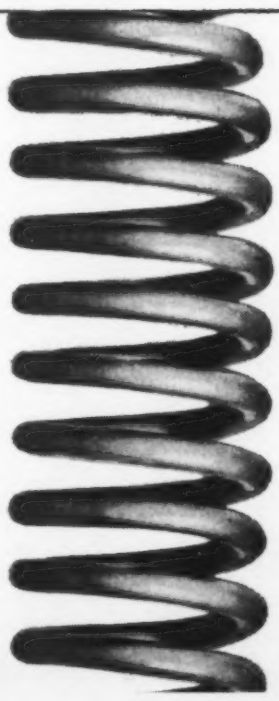




Roebling Round and Shaped Wires are made in various grades of steel. Some are also available in other metals, including Copper, Bronze and Brass.

Every inch dependably uniform... that's why users say...

Today it's Roebling!



for Oil-Tempered Spring Wire

NO IFS, ANDS OR BUTS . . . production records show that Roebling Oil-Tempered Spring Wire cuts down machine stoppages and minimizes rejects for users everywhere. This is a *quality* wire. Every inch is alike in gauge and finish . . . absolutely uniform in mechanical and metallurgical properties.

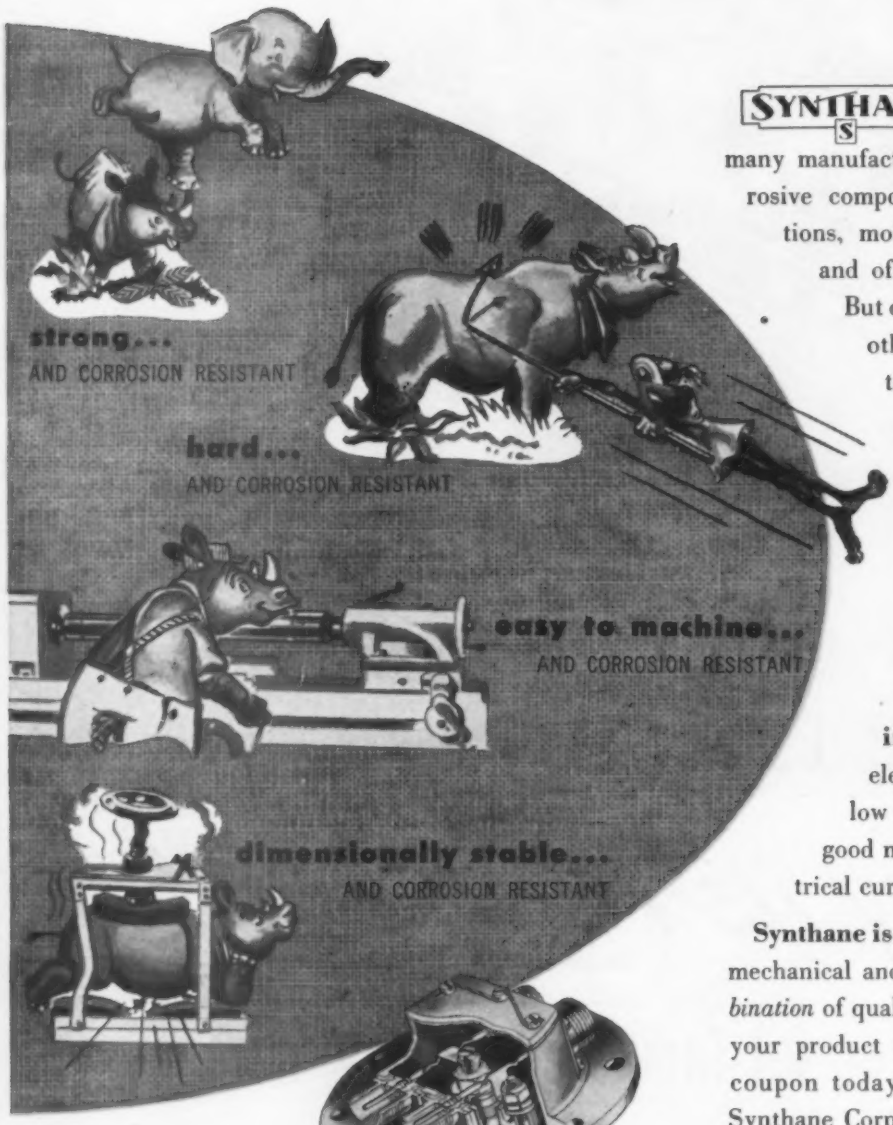
Roebling has one of the largest mills in the country for the making of specialty wires. From steel-making to finished wire, every manufacturing step is performed in Roebling's own plants. Modern techniques and modern precision equipment assure a product that saves you preparation time . . . brings faster, smoother operation.

Your Roebling Field Man will gladly help you choose the best wire—round, flat or shaped—for greatest efficiency and economy. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING *A CENTURY OF CONFIDENCE*

Atlanta, 934 Avon Ave. ★ ***Boston,*** 51 Sleeper St. ★ ***Chicago,*** 5525 W. Roosevelt Road ★ ***Cincinnati,*** 3253 Fredonia Ave. ★ ***Cleveland,*** 701 St. Clair Ave., N. E. ★ ***Denver,*** 4801 Jackson St. ★ ***Houston,*** 6216 Navigation Blvd. ***Los Angeles,*** 216 S. Alameda St. ★ ***New York,*** 19 Rector St. ★ ***Philadelphia,*** 12 S. Twelfth St. ★ ***Portland,*** 1932 N. W. 14th Ave. ★ ***San Francisco,*** 1740 Seventeenth St. ★ ***Seattle,*** 900 First Ave. S.

Will Corrosion Resistance + "X"



SYNTHANE plastic laminates have helped many manufacturers solve corrosion problems. Corrosive compounds, gases, various water compositions, moisture, oils, and gasoline have little, and often no, adverse effect upon Synthane. But corrosion resistance is only one of many other Synthane advantages abbreviated to the "X" above.

Synthane is also strong. Good tensile, flexural and compressive strengths, together with impact fatigue resistance and light weight, are other Synthane characteristics. Manufacturers may choose Synthane for one or more of these reasons.

Synthane is an excellent electrical insulator. Properties such as high dielectric strength, low power factor and low dielectric constant make Synthane a good material for any application where electrical currents must be held in check.

Synthane is a material for all industry. Chemical, mechanical and electrical characteristics form a *combination* of qualities in Synthane that you may need in your product or process. Clip and mail the handy coupon today for information about Synthane. Synthane Corporation, Oaks, Pa.



SYNTHANE

AT WORK IN INDUSTRY

Minneapolis-Honeywell Regulator Company selected Synthane for the Tank Unit components of their electronic Fuel Gage equipment because of Synthane's corrosion resistance, good dielectric properties and dimensional stability. M-H Fuel Gages are standard in many USAF aircraft such as the famed Boeing B-50, one of which (the Lucky Lady) flew non-stop around the world last year.

PLASTICS WHERE PLASTICS BELONG

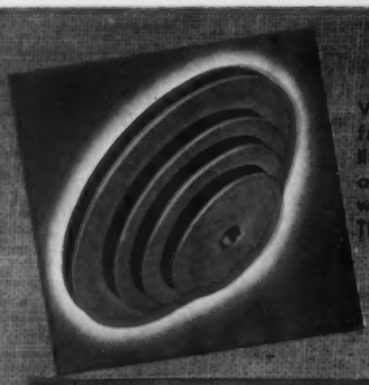
DESIGN • MATERIALS • FABRICATION • SHEETS • RODS • TUBES

Help You Solve *a Problem?*

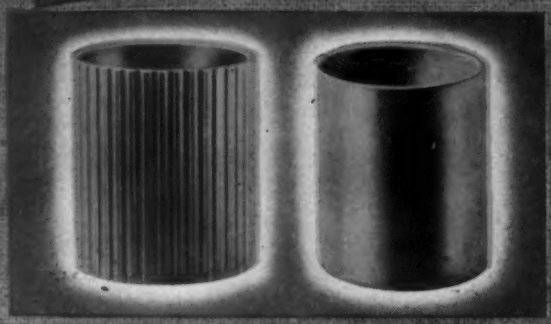


The "X" in our headline does not represent an unknown factor. It does represent a **combination** of many well known, use-proved characteristics.

Several parts made from Synthane are illustrated at the right. In each case the user chose Synthane for one or two primary properties combined with many other properties desirable for good performance. That's the big advantage in using Synthane. You get essential characteristics plus many extra and desirable characteristics in *combination*. We will work with you to determine the specific grade of Synthane required to meet your job needs, or we may develop a special grade for you.



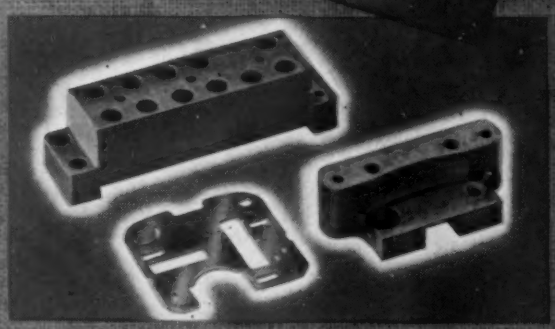
V-Belt pulleys made from Synthane are light in weight, start and stop quickly, and waste little power. They are also strong and wear resistant.



Nylon sizing bobbins stand up under the powerful crushing forces exerted by drying yarns, are highly resistant to the corrosive action of the size.



An excellent electrical insulator, Synthane is widely used for timer cams. Synthane cams operate without noise, nearly eliminate friction. Calibrations are easily printed on Synthane cams by the Synthographic Process.



The ease with which Synthane may be machined led to its use for the aircraft and hearing aid parts shown above. Other valuable properties are its dimensional stability, light-weight and strength.



SYNTHANE

WHERE SYNTHANE BELONGS

MOLDED-MACERATED • MOLDED-LAMINATED

SYNTHANE CORPORATION
7 River Road, Oaks, Pa.

Gentlemen:

Please send me, without obligation, information on Synthane sheets, rods, tubes, and fabricated parts.

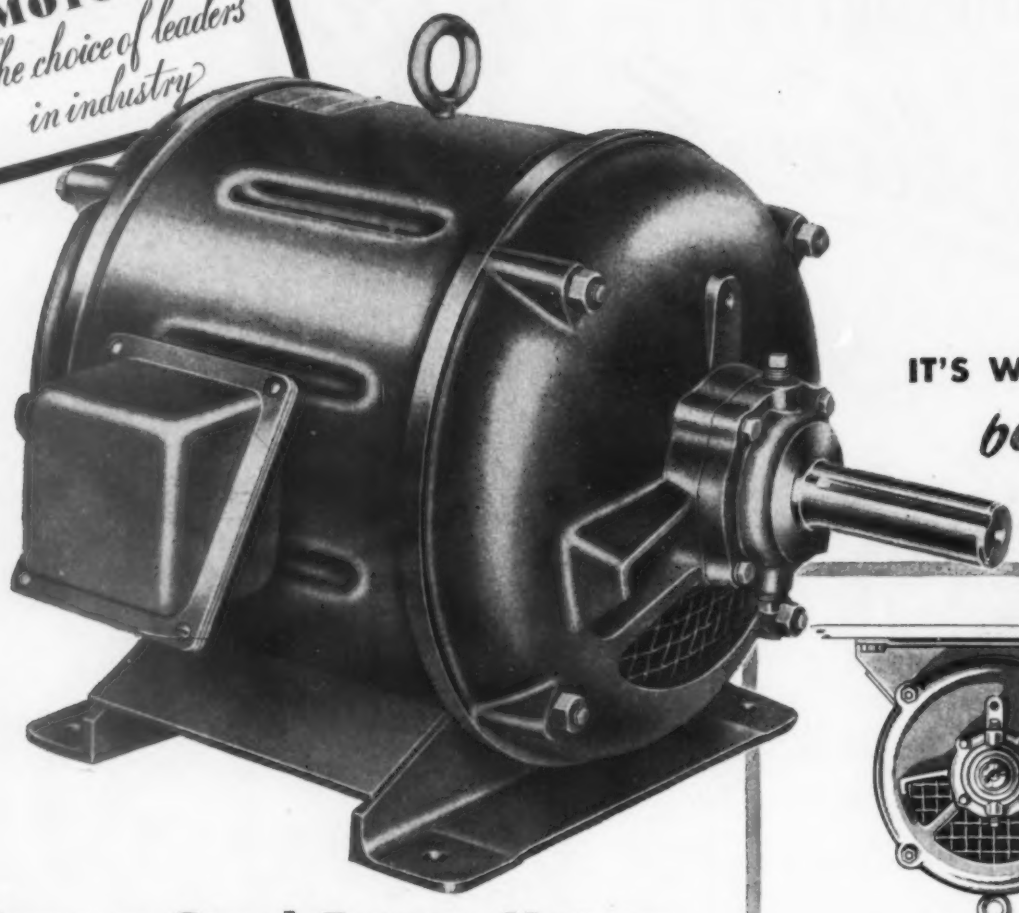
*Name*_____

*Company*_____

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*City*_____ *Zone*_____ *State*_____

WAGNER MOTORS
...The choice of leaders in industry



IT'S WAGNER *because:*

Diagram showing endplates rotated 180° for drip-proof installation on ceiling.

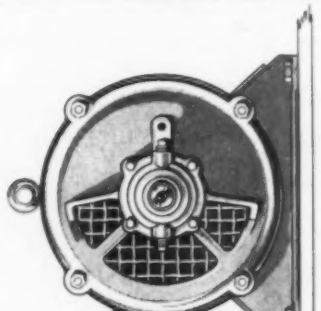


Diagram showing 90° rotation of endplates for drip-proof horizontal mounted sidewall installation.

Wagner Steel-Frame Motors proved by years of service!

Wagner steel-frame drip-proof polyphase motors have been proved—durable, dependable, and trouble-free—by twenty years of hard usage in industry after industry.

These open-type squirrel-cage motors are available through 326 frame size, with either sleeve or ball bearings. The motor frames are formed of heavy rolled steel, shaped to accurately center the stator core and to provide passages for adequate ventilation. A large auxiliary fan draws in air through the openings in the front endplate, forces it through these passages and out through the endplate openings on the drive end. Heat is effectively carried off from all parts of the motor. Because of the fact that there are no openings in the frame, these motors are completely drip-proof when mounted in the normal horizontal position, and by rotating the endplates are still drip-proof in the sidewall or ceiling horizontal positions.

Bulletins give full information on the complete line of Wagner Motors. Thirty-one branches, located in principal cities, are ready to assist you whenever you have a motor problem. In addition, almost 500 authorized motor repair shops provide speedy, nationwide service facilities.

Wagner Electric Corporation EST. 1891

WAGNER ELECTRIC CORPORATION
6360 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

BRANCHES IN 31 PRINCIPAL CITIES

M50-50

WHAT'S THE SECRET OF THIS BEAUTY THAT ABRASION CAN'T STEAL?



Even if the plating wears off, tableware keeps its beauty—when it's fashioned of Riverside *Nickel Silver.*

This tough, close-grain metal is *silvery white clear through*, shows no ugly patches when the surface plating goes. And that happens less frequently because Riverside *Nickel Silver* permits a smooth, uniform plate without preplating or flash coating.

The world's leading manufacturers of flatwear use Riverside *Nickel Silver* for plated products. Other manufacturers use it for jewelry, slide fasteners, keys, surgical appliances—because this alloy is non-corrosive, inherently tough, easily worked, and available in grades from dead soft to stock of extreme spring temper.

If you have a problem involving Nickel Silver, Phosphor Bronze, Cupro Nickel or Beryllium Copper—send the case history to Riverside. In cooperation with your technicians, Riverside metallurgists will review specifications, properties and fabricating methods; recommend a specific solution; and produce an alloy to meet your requirements. Be sure to get your copy of Riverside's new Handbook.



FREE—*Send for this Pocket-size Alloy Handbook and Guide to Specification.*

RIVERSIDE ALLOYS

phosphor bronze • nickel silver • cupro nickel • beryllium copper

Alloys developed by research, proved by use

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Star Performers

in Simplifying Drive Designs and Reducing Power Transmission Costs

WHITNEY CHAIN DRIVES

Whitney Roller Chains in single or multiple widths.



Whitney Cut Tooth Sprockets for all types of chain.

Whitney Roller Chain Flexible Couplings for positive yet flexible direct drives.



Whitney Silent chains for quiet, high speed power transmission.

Cost and performance records across all types of industry . . . on all sorts of equipment . . . prove that versatile Whitney Chain Drives not only simplify your drive selection, but reduce costs as well.

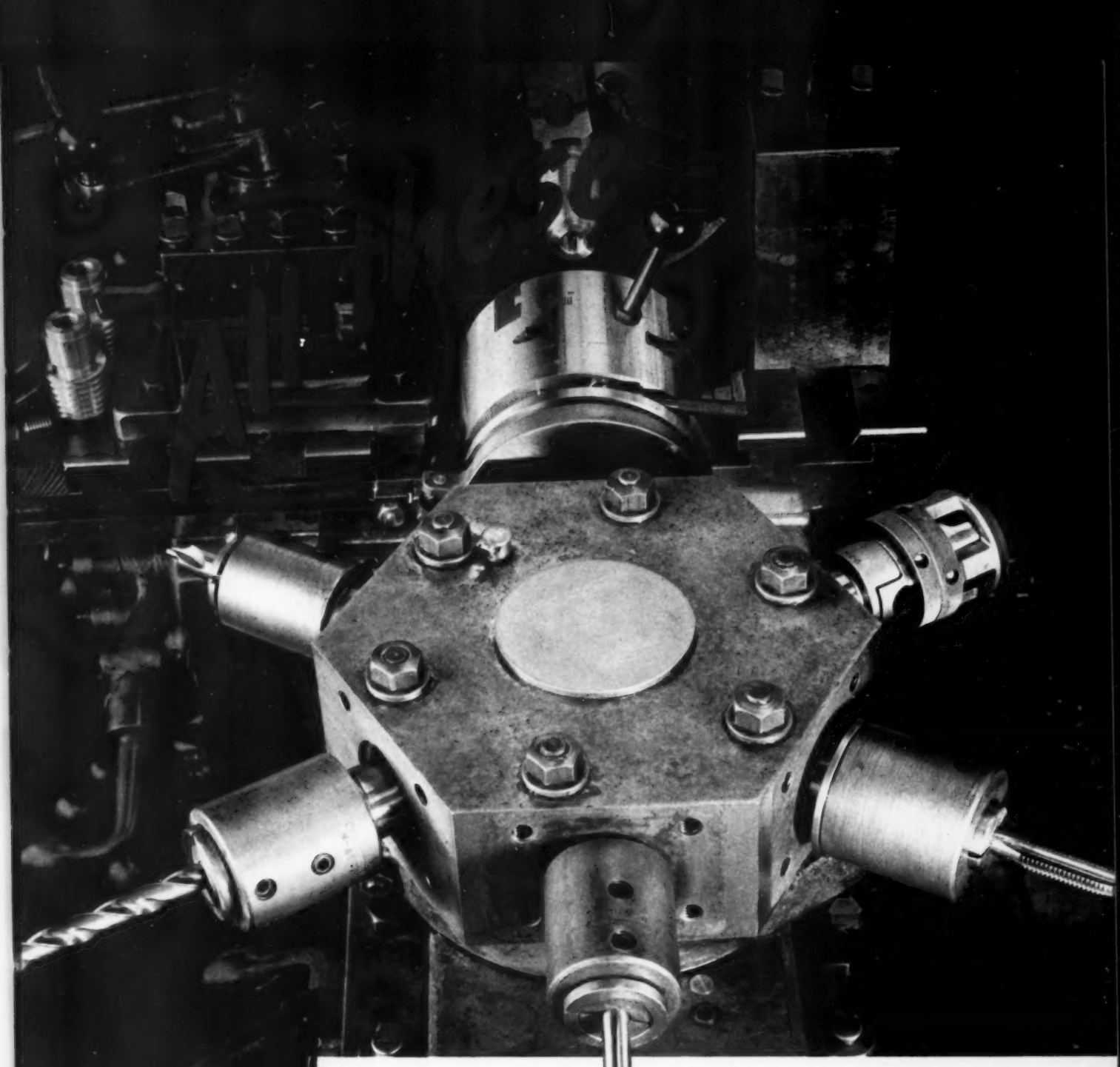
For example — these quality drives will operate on long or short centers, drive shafts clockwise or counter clockwise . . . singly or simultaneously. And from the cost angle, remember that Whitney Chain Drives deliver *full rated* machine output without friction loss or slippage. Their alloy steel construction, to Whitneys' renowned quality standards, assure long service life with minimum maintenance.

PLUS WHITNEY SERVICE — And Remember — Whitney Chain Drives . . . roller, silent, conveying chains, and cut-tooth sprockets . . . are carried in stock by a nation-wide network of more than 130 Whitney distributors. This fast local service saves you time, assures prompt delivery of your chain drive requirements. In addition, 15 Whitney field offices, strategically located throughout the country, are at your service to help you solve your power transmission problems. For Catalog or specialized Whitney field offices write:

WHITNEY CHAIN COMPANY

207 HAMILTON ST., HARTFORD 2, CONNECTICUT





and gages too!

Yes, only GREENFIELD with its GEOMETRIC Division manufactures in its own plants, a complete line of Cutting Tools plus Gages! Yes, only GREENFIELD could duplicate the above tooling and top it off with all necessary Gages.



REGULAR STOCK ITEMS

	Capacity From	Capacity To		Capacity From	Capacity To
TAPS and COLLAPSING TAPS...	0–80	8½″–8	DRILLS.....	#80	3½″
DIES and DIE HEADS.....	0–80	6″–7	REAMERS.....	7/0	2½″
GAGES—THREAD.....	0–80	1½″–6	END MILLS.....	1/16″	2″
GAGES—PLAIN.....	.059″	4.510″			

BUY TOOLS WITH *CONFIDENCE* BUY *GREENFIELD* TOOLS

GREENFIELD TAP AND DIE CORPORATION

GREENFIELD, MASSACHUSETTS

Geometric "EJ5"

THE MIDGET SOLID ADJUSTABLE DIE HEAD

A. Floating shank
B. Solid shank
C. For Brown & Sharpe threader
D. For Swiss type Automatics
E. Projection type Chasers



Tiny? Yes, these four solid adjustable die heads, shown actual size, easily fit in a man's hand yet, when it comes to producing quality threads they're giants. Their precision finish, simple construction and easy action make them a favorite wherever small, fine pitch threading is done.

Capacity $\frac{1}{16}''$ to $\frac{3}{16}''$ as fine as 80 pitch.

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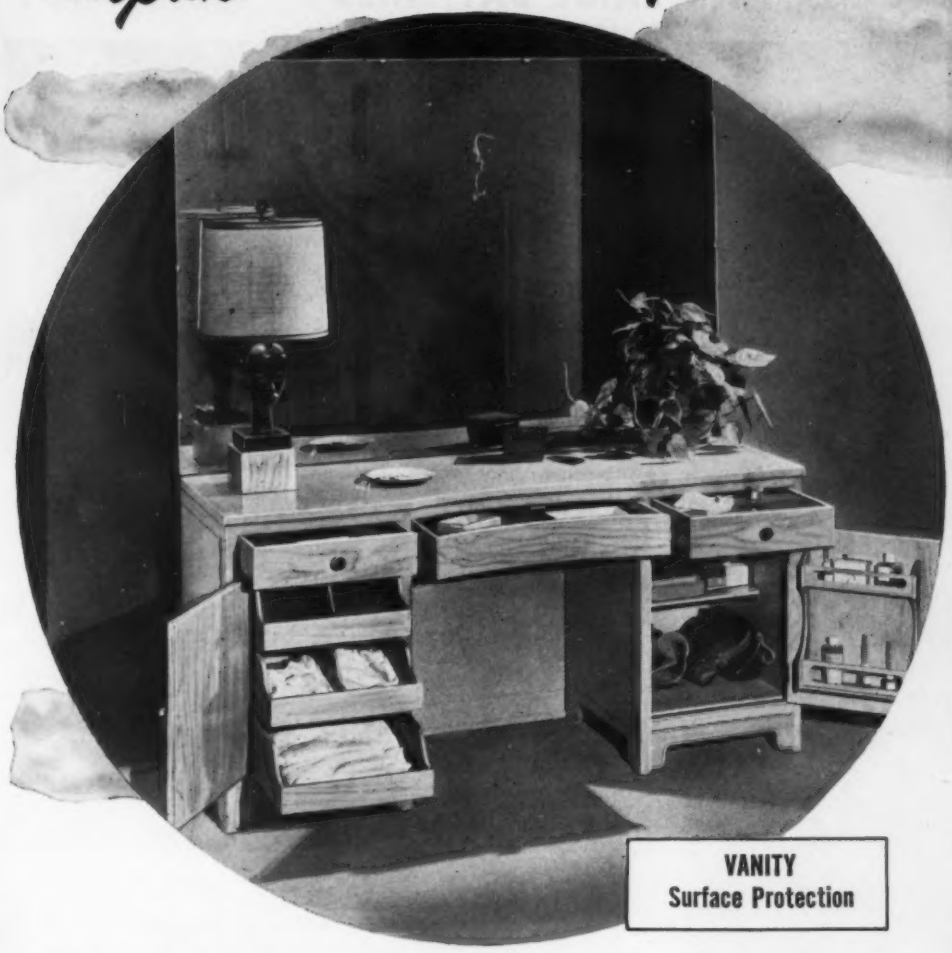
BE SURE Buy GEOMETRIC

GEOMETRIC TOOL COMPANY DIVISION

GREENFIELD TAP AND DIE CORPORATION

NEW HAVEN 15, CONNECTICUT

Kimpak* Float Packaging





1. Every exposed surface of this finely finished vanity, especially the highly polished top, must be protected against scratching, rubbing, press marking.



2. Sheet of KIMPAK is applied to all finished surfaces. Sheets in correct size or cut from rolls of specified width, minimize inventory requirements.



3. Now completely wrapped in KIMPAK, fastened with adhesive tape, the vanity is ready to insert in its corrugate shipping container.

All photographs courtesy of Henredon-Heritage Co., Morganton, N. Carolina.

Cuts shipping costs— reduces damage in transit!

Does your product need super special protection in shipment against shock and vibration—a smooth, soft covering for finely finished surfaces—or simply a material to fill in the voids of an irregular shape?

Whatever your packaging problem, the answer very likely is KIMPAK* Float Packaging. It's the safe, economical, *modern* way to protect every kind of product, from tiny vials of liquid gold to the gleaming finish of a mighty diesel locomotive.

KIMPAK creped wadding comes in a wide variety of specifications that cover all Four Basic Methods of Interior Packaging. It's so light, so easy and pleasant to handle, your labor and shipping costs can be measurably reduced. It's clean, white, soft and completely free of abrasive particles. Yet tough, resilient KIMPAK provides superior protection against the hazards incurred in shipping and storage.

Why not discover today how smart-looking KIMPAK gives your product sparkling new sales appeal as well as incomparably safe, sure protection. For further information, look in your classified telephone directory under "Packing Materials" or "Packing Materials - Shipping" or write directly to Kimberly-Clark Corporation, Neenah, Wisconsin.

Visit our booths, Nos. 201 & 203 at the Industrial Packaging and Materials Handling Exposition, Convention Hall, Philadelphia, Pa., Oct. 10-12

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CREPED WADDING

*T. M. REG. U. S. PAT. OFF.

FREE BOOKLET!

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Neenah, Wisconsin P-1050

Please send me free, the illustrated KIMPAK booklet, "Float Packaging."

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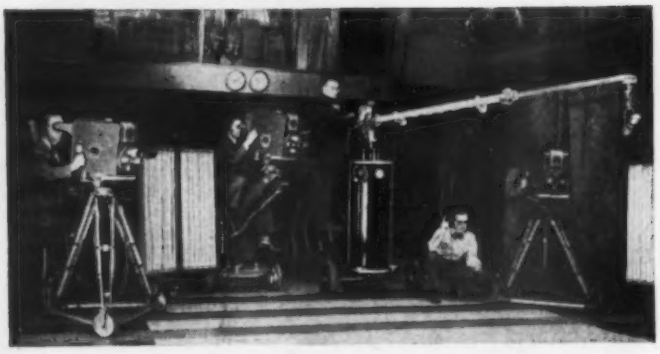
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Want Additional Product Information? See Page 19.

WHERE DEPENDABILITY IS VITAL
...YOU'LL FIND EXIDE BATTERIES



LIGHTNING ASSUMES FANTASTIC FORMS... does unpredictable things. When it short-circuits a power line, a circuit breaker is tripped open . . . but is instantly closed by storage batteries. Instead of your lights going out, all you see is a flicker. Many Exide Batteries are used by public utilities for this service.



BEHIND THE SCENES IN TELEVISION. Important to its transmission is the telephone industry's amazing coaxial cable, which can carry television programs or hundreds of conversations at the same time. Storage batteries are essential equipment in television broadcasting. Many are Exides.



THROUGH CAR TO VACATION LAND. Hot city streets seem miles away the instant you enter a comfortable, air-conditioned passenger car. On many famous trains, electrical power for air-conditioning is supplied by Exide Batteries.



FAR BELOW THE EARTH'S SURFACE coal mining has been revolutionized by modern mechanization. Much of the haulage equipment is powered by safe, dependable Exide Batteries.

All around you, Exide Batteries are serving you in numerous ways. For there are Exides for every storage battery need.

Exide Batteries provide motive power for battery industrial trucks, which help cut handling costs and speed the flow of goods to you. In railway service Exide Batteries are also used for car lighting, Diesel locomotive cranking and signal systems. They provide battery power for ocean vessels, airplanes, municipal fire alarm systems, emergency lighting. And on millions of cars, trucks and buses, they daily prove that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

Exide

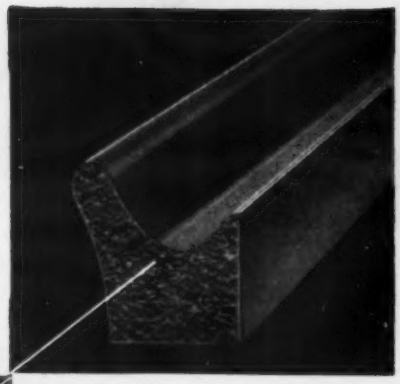
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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 *Exide Batteries of Canada, Limited, Toronto*

An imaginative automotive engineer used

Spongex® cellular rubber

to keep rattles and weather out for greater driving pleasure





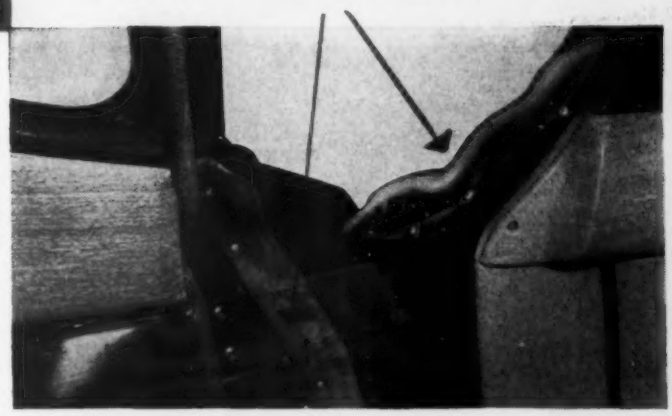
Suppose your car doors shut metal to metal! What a *crash* when you slammed them. What squeaks, rattles and groans as you drove along! And you'd get wet. You would freeze. It would *always* be drafty.

But a sponge rubber product seals out drafts, temperature and moisture . . . cushions shock and vibration . . . absorbs noise. Doors shut snugly and quietly, slam after slam after slam.

If you have a vibration, insulation, cushioning, gasketing, sealing or sound damping problem, think about *Spongex*. Cellular rubber does not become a "product" until you make it one in *your* application. We welcome new problems.

Illustration below—The vertical cord is decorative and functional. This fabric covered Spongex cord seals out drafts.

On door and body are Spongex pieces molded around metal to afford reinforcement, rigidity and mechanical fastening.



Spongex forms shown are from molds designed by us and owned by our customers. As such they are not offered for sale. Similar products can be molded to your requirements in molds designed for you.

TECHNICAL BULLETIN ON SPONGE RUBBER AVAILABLE ON REQUEST

The World's Largest Specialists in Cellular Rubber

THE SPONGE RUBBER PRODUCTS COMPANY

304 Derby Place, Shelton, Conn.

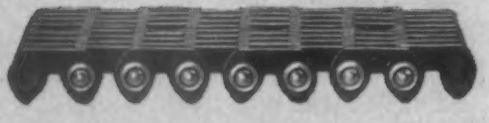
Wherever You are...

UNION CHAIN
is at your service





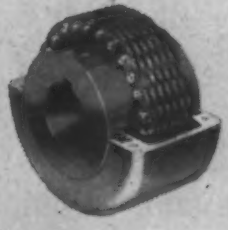
UNION ROLLER CHAIN



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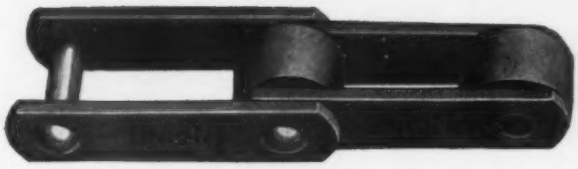
Suppose You Need a UNION Heavy Duty Chain

. . . for a drive or conveying application where heavy loads, slower speeds, long life and moderate cost are factors. Union Chain manufactures a complete line of these heavier types of chains, sprockets, flights and aprons, in addition to roller chain and silent chain, and is therefore in a position to make competent, unprejudiced chain recommendations.

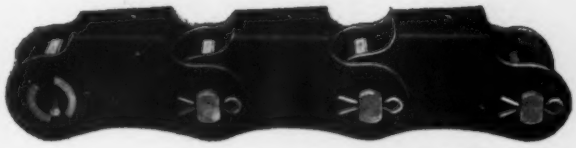
Furthermore, an important phase of Union's service to its customers is the designing and building of special chains for unusual applications, particularly for conveying and elevating. Union is in an unusually fortunate position to render such service since we manufacture steel chains of all types and nothing else. This specialization has given us an unusual insight into problems of power transmission and conveying which our customers find valuable to them.

Perhaps we can be of help to you. Your inquiry will be welcomed.

TYPICAL UNION DRIVE AND CONVEYING CHAINS



HB STRAIGHT SIDE BAR ROLLER CHAIN



BRIDGE CHAIN



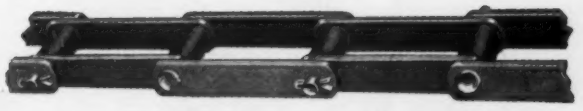
BP CHAIN



BP ICE CHAIN



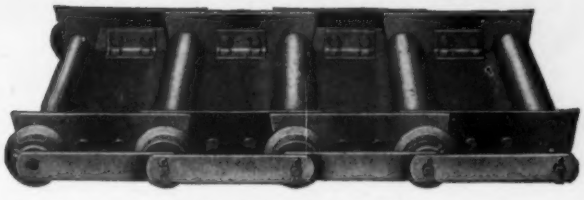
HB STRAIGHT SIDE BAR BUSHING CHAIN



COMBINATION MALLEABLE IRON AND STEEL CHAIN



APRON CONVEYOR STYLE A



APRON CONVEYOR STYLE B

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TRANSMIT POWER
UNION CHAINS
CONVEY MATERIALS

Study fuel costs at long range...

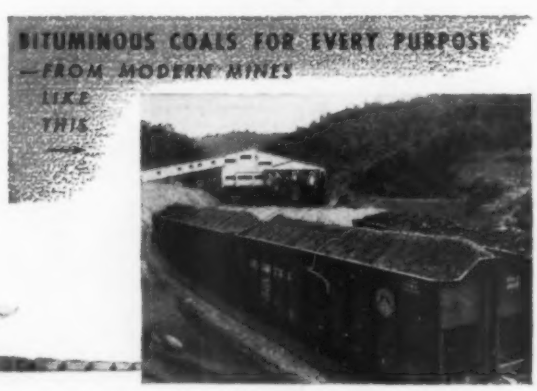
then power *your* plant with B&O Bituminous Coals

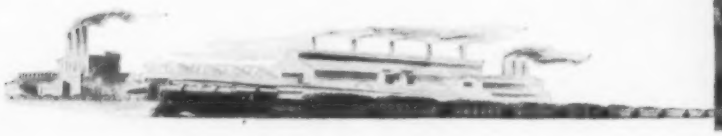


Power plant design and operation present few problems to an industrial engineer. But, truly economical performance rests on *added knowledge*—of reserves and availability of fuels—of their cost relationships and combustion characteristics.

In planning the operation of your power plant, study the value of bituminous. Check production cost at the mines. Look at delivered cost of Btu's. Study how carefully the coal you order is sized and cleaned so that waste is avoided. Check availability of continuous supply in normal times and in emergencies. Find out if reserves are extensive enough to assure future supply.

In the coals produced on the Baltimore & Ohio, *you'll find the right answers* to low-cost, long-range supply. Whether you need high-, medium-, or low-volatile coals, they're here in abundance. *Ask our man!* He shall be glad to supply technical help on every phase of coal production, preparation, distribution, and utilization.





LINKING 13 GREAT STATES WITH THE NATION
B&O

BALTIMORE & OHIO RAILROAD

Constantly *doing things*—better!

Want Additional Product Information? See Page 19.

MICRO SWITCH ENGINEERING

again proves that these small precision switches can handle big jobs!



Striking proof of the ability of small, compact, lightweight MICRO Precision Switches to "stand up" and perform dependably on a rugged and complex job is furnished by the Warner & Swasey Electro-Cycle Turret Lathe.

Cooperating with the maker's own engineers, MICRO SWITCH ENGINEERING provided, for installation within the machine's control head, five MICRO Precision Switches to give close and reliable control over repeated millions of trouble-free operations. These operations included spindle starting, reversing, stopping, and speed changes throughout each cycle of operation.

Tasks such as furnishing the exact precision switches for "electric brain" control of heavy-duty machinery typify the skilled way in which MICRO SWITCH ENGINEERING has successfully developed more than 4600 different precision switches for the individual problems of industry.

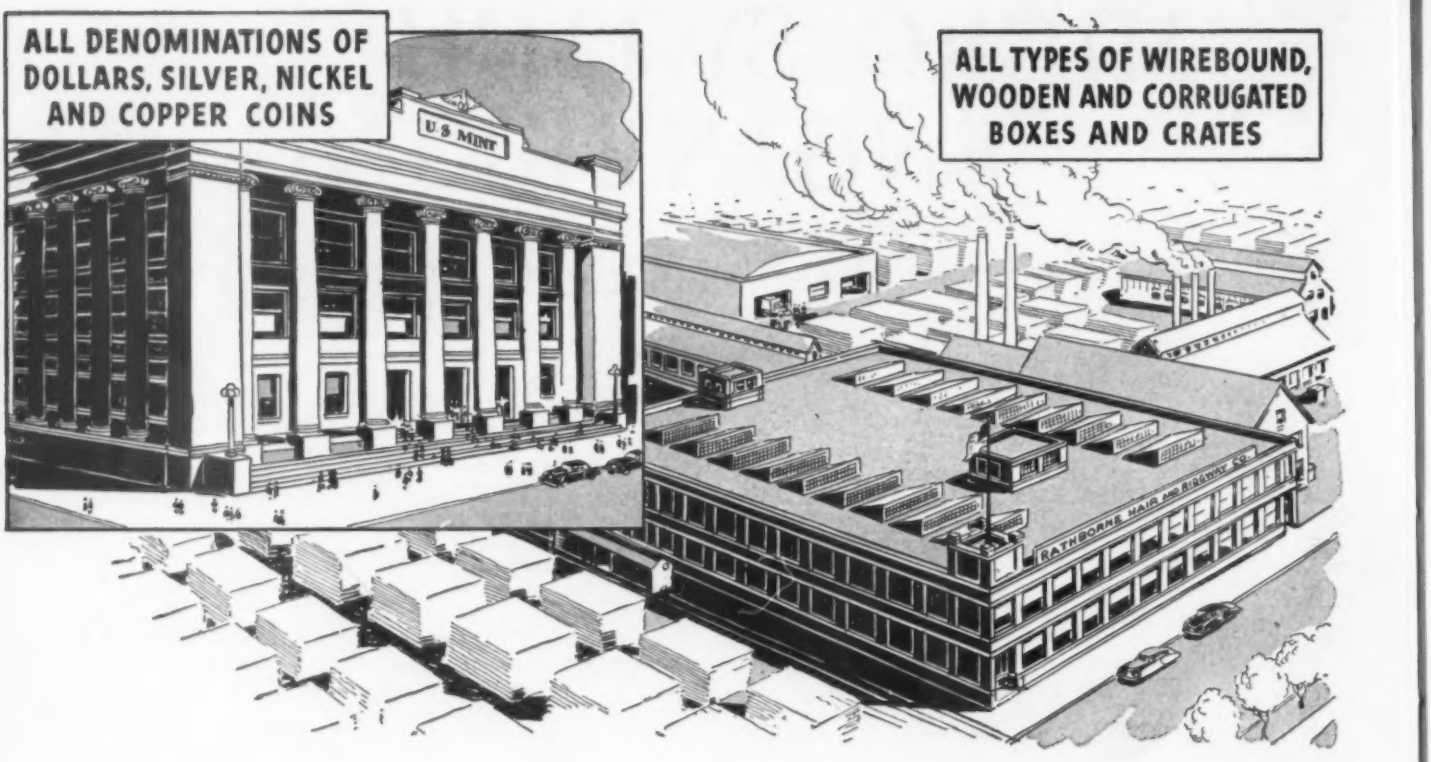
If you or your engineers are faced with switch-control problems in designing or redesigning your product—whether a large machine tool or a delicate instrument—MICRO SWITCH ENGINEERING can supply the snap-action precision switch for your requirements. Consultation entails no obligation on your part. Write MICRO SWITCH, Freeport, Illinois, or nearest branch office.

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DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR CO.
FREEPORT, ILLINOIS, U.S.A.

Branches in principal cities of United States and Canada

MICRO... *first name in precision switches*

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One Reliable Source for Everything

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WOODEN BOXES and CRATES

CORRUGATED FIBRE BOXES

BEVERAGE CASES

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PALLETS

The shipping requirements of your various products may call for a number of types of wirebound, wooden or corrugated shipping containers.

SUPERSTRONG can supply all of your needs with a complete line of boxes and crates, backed by the assurance of nearly a century of experience and reliability. A SUPERSTRONG container is designed and built to the special requirements of the product which it must protect.

SUPERSTRONGS incorporate features of increased efficiency and economy. Just let us know when we may call and tell you the full story.

RATHBORNE, HAIR AND RIDGWAY BOX CO.
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SUPER-SONIC BLAST...

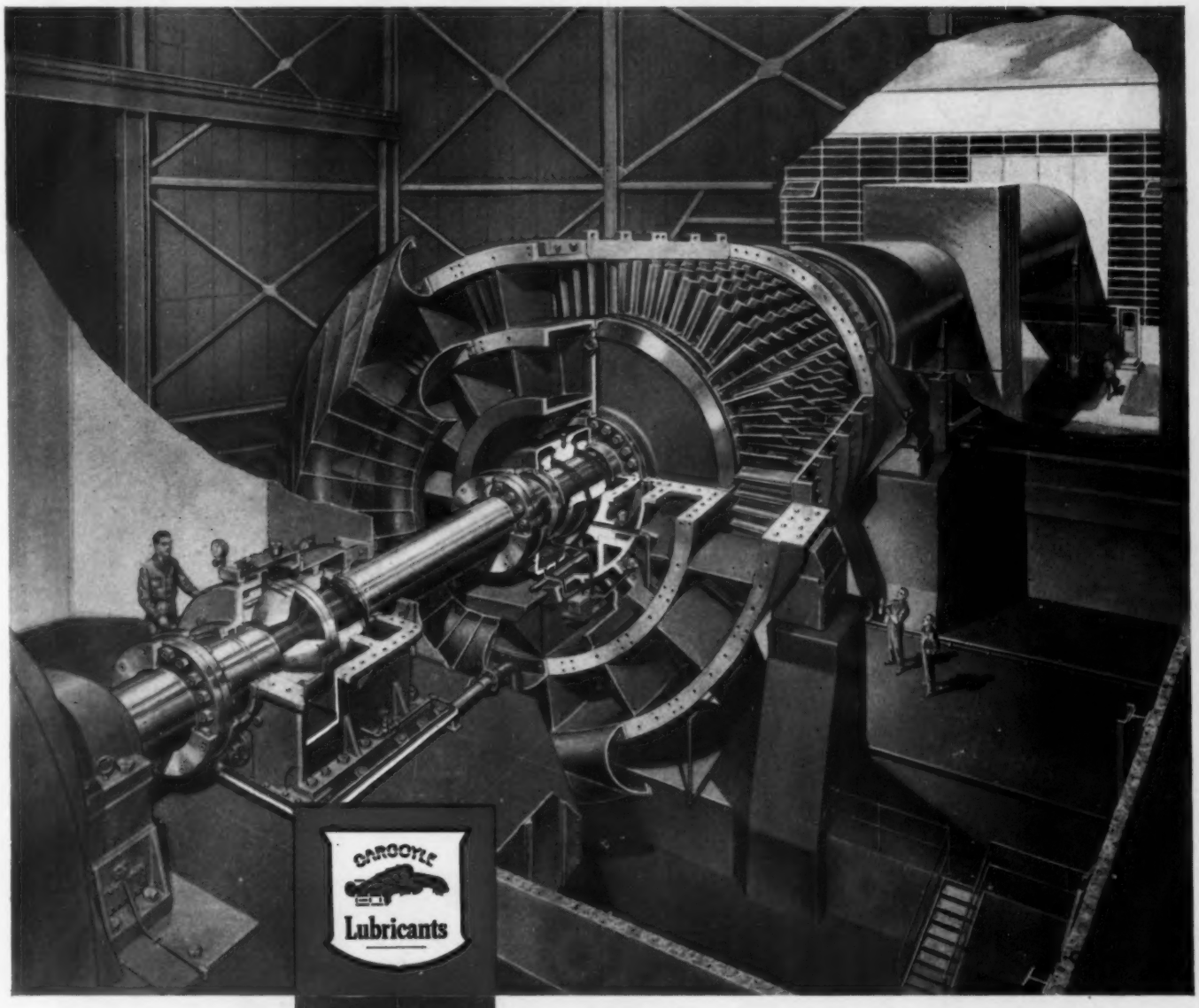
World's Largest Faster-than-Sound Wind Tunnel gets the World's Greatest Lubrication Knowledge

What happens to jet planes and rockets at supersonic speeds?

This giant wind-maker at Lewis Flight Propulsion Laboratory, N.A.C.A., Cleveland, is providing the answers. It compresses 2,200,000 cubic feet of air per minute—creates a blast that is accelerated to 1500 m.p.h. for flight performance studies.

That huge 18-foot, multiple-stage rotor whirls at 800 r.p.m.—exerts a thrust of 300,000 pounds on the thrust bearing, left, . . . a unique challenge to lubrication engineers. Socony-Vacuum solved this problem—now furnishes the correct oils for the thrust bearing, rotor bearings, and three driving motors, totaling 87,000 h.p.

You can get this same kind of lubrication engineering service for *your* plant. Call your Socony-Vacuum Representative.



This drawing prepared with cooperation of S. Morgan Smith Company and the National Advisory Committee for Aeronautics

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Correct Lubrication

Want Additional Product Information? See Page 19.



but a super market would have

SAVED HER PLENTY!

Now STEEL AND ALUMINUM BUYERS ARE MORE FORTUNATE — ELIMINATE RISKY INVENTORIES BY PURCHASING STOCKS AS NEEDED FROM THE

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Ordering Purdy steel and aluminum, as required, eliminates the need of large inventories subject to obsolescence and depreciation. You save valuable plant space and your materials are delivered to your machines when needed for production. Phone, wire your needs, today.

FOR FAST SERVICE ON—

TELEPHONE—

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INVENTORY IS OUR BUSINESS!



How New "Washer-less" SPIN-LOCK Screw Cuts Assembly Costs...

It's *one piece!* There's no washer to add... this time-wasting step is completely eliminated. RB&W's new SPIN-LOCK Screw can be efficiently hopper-fed.

Locking power is *positive*... no parts to cant or fall off. What's more, it fastens *neater* (flush with surface) and *safer* (no protrusions to catch fingers or clothes).

"SPIN-LOCK" has the features of the washer *built in*—thanks to the *patented* ratchet-like teeth on the underside of the head.

Specify it for faster, tighter assembly! Choice of heads: hexagonal, pan, truss or flat.

OTHER OUTSTANDING FEATURES

Holds tighter under extreme vibration.

Has physical qualities of high-carbon, heat-treated screws.

Teeth won't wear off or flatten—they're *case-hardened*.

Can be re-used—will still lock securely.

More locking power due to more locking *teeth* (they're on head's *outer* edge, for *greater* contact).

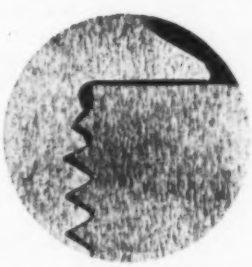
Makes excellent contact in electric equipment.

Drives easily in hard-to-reach spots. No extra parts to fall off.

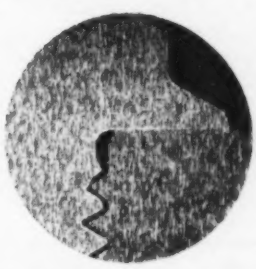
Cuts purchasing costs and trouble. Just one piece to buy—one requisition to fill.

Cuts inventory—only one piece to stock.

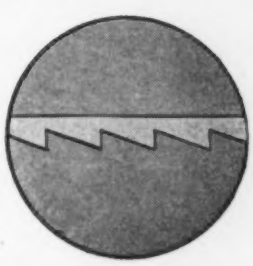
Unretouched photos* reveal superior performance of SPIN-LOCK Screw...



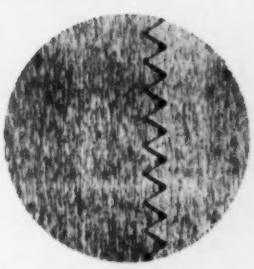
Teeth of the SPIN-LOCK Screw are touching, while the bearing surface still shows clearance. Further tightening causes flexing of head's rim. This assures constant and continuous pressure of teeth against the bearing surface.



Teeth of the SPIN-LOCK Screw are firmly embedded in the surface. They bite into the metal whenever a tendency to loosen develops.



Ratchet-like structure of teeth is the secret of SPIN-LOCK's tighter grip. Teeth are *angled* on advancing side to allow tightening... *vertical* in back to bite into the surface to prevent loosening.



The SPIN-LOCK Screw presses tightly against upside of thread... developing the *high tension* you need to fasten your product rigidly and *keep it that way.*

**Exact condition of contact between Screw and tapped holes... magnified 35 times.*

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

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105 Years Making Strong the Things That Make America Strong

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Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland. Sales agents at: Portland, Seattle. Distributors from coast to coast.

Send for Free Folder Giving Full Details!

Russell, Burdsall & Ward Bolt and Nut Company
Port Chester, N. Y.

Please send me free your SPIN-LOCK Screw folder, with complete data of types and specifications.

NAME.....

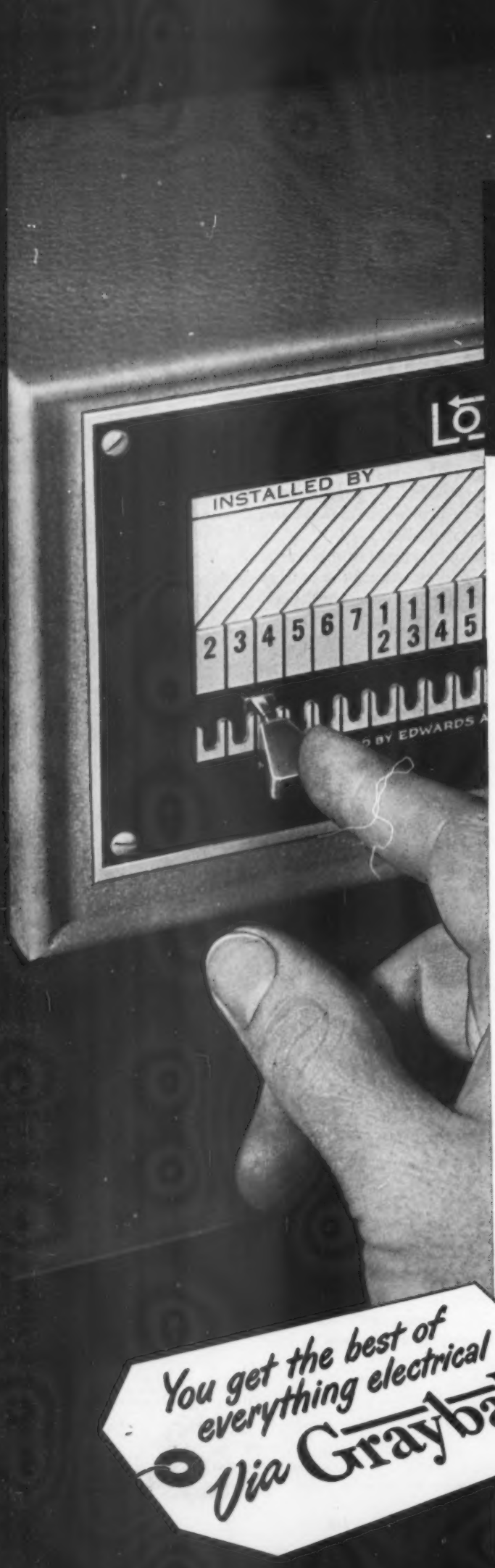
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COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

Want Additional Product Information? See Page 19.



PUT YOUR PLANT AT YOUR FINGERTIPS

WITH SIGNALING via GRAYBAR

Just flick a lever to call or talk with any key employee, anywhere in your plant! Clear, fast communication among your various departments will save many hours of time ordinarily lost in locating personnel, issuing urgent orders, and checking plant operations. Via Graybar, you can get all the proper equipment for every type of voice or code-paging requirement.

From "intercom" to siren

There's Webster Electric Teletalk, an amplified communication system that connects you directly with personnel at selected points in your plant. It relieves switchboard congestion and saves countless steps through two-way or multiple inter-office conversations. There's the Edwards Lokator, a paging system that speeds location of personnel throughout the plant. Installations can be made with a wide variety of signals — from buzzers, musical notes or silent flashing lights to bells, horns, or howlers that will penetrate any plant noise. Or you may like U.S.I. Sound-powered Telephones. For common or selective talking systems, these hand-sets transmit distortion-free conversations over long circuits without external power! A rugged weatherproof set is available with magneto howler signals. For warning, Graybar has Benjamin and Federal sirens.

Expert help in planning

There are Graybar offices in more than one hundred cities. Your local Graybar Representative will give you or your electrical contractor complete information on all types of talking, calling, warning, and locating equipment. The help of a Graybar Signaling Specialist is available in choosing the best combination of devices and accessories for your particular need. We offer you similar service in the selection and procurement of supplies for lighting, wiring, ventilation, and other electrical installations.

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5055

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Please send me your free illustrated folder, "Signaling and Intercommunication Systems for Every Need."

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The National Magazine of Industrial Procurement

VOL. 29, No. 4 OCTOBER, 1950

Another Critical Test for Private Enterprise 67

Today's Purchasing Agent Must be Fast on His Feet ....*W. R. Murray* 71

Solving Problems of Business Procedure .....*W. J. Granberg* 73

Back Door Interview 74

Don't Let Rust Ruin Your Purchases .....*T. G. Hicks* 75

PURCHASING Reports on Purchasing Opinion
How Effective Is Visual Sales Presentation? 77

Do Purchasing Agents Believe in Santa Claus? 79

New Director of Industrial Controls Has Purchasing Experience 82

Pattern for Industrial Mobilization 83

Purchasing Packaging by the Mile .....*H. H. Slawson* 84

"Static" Can Be Useful Too .....*H. B. Winslow* 86

Reducing Costs of Distribution 89

Purchasing at Packard .....*D. G. Baird* 91

Expediting—As the Expeditee Sees It.....*J. G. Davies* 96

Proper Flooring Is a Wise Investment .....*W. Mueller* 98

The Military-Manufacturing Team .....*G. C. Reinhardt* 100

Where We Stand
Commodity and Business Trends 103

Integrated Purchasing System Is Oklahoma's Answer....*S. A. Peck* 111

Get Acquainted with Stud Welding .....*G. E. Henry* 116

Personal Goods Purchaser .....*D. Markstein* 118

Insurance Law for Purchasers .....*Leo T. Parker* 120

Visible Controls for Purchasing and Inventory Policy....*E. C. Boykin* 182

Forms Forum 184

MONTHLY FEATURES

Purchasing Previews 13

Late Trade Bulletins and Catalogs 19

F. O. B. 30

Highlights 69

New Products — Ideas..... 130

Office Equipment and Supplies 179

Among the Associations 204

Personalities in the News 248

Letters to the Editor 336

Buyer's & Seller's Mart 338

Index to Advertisers 340

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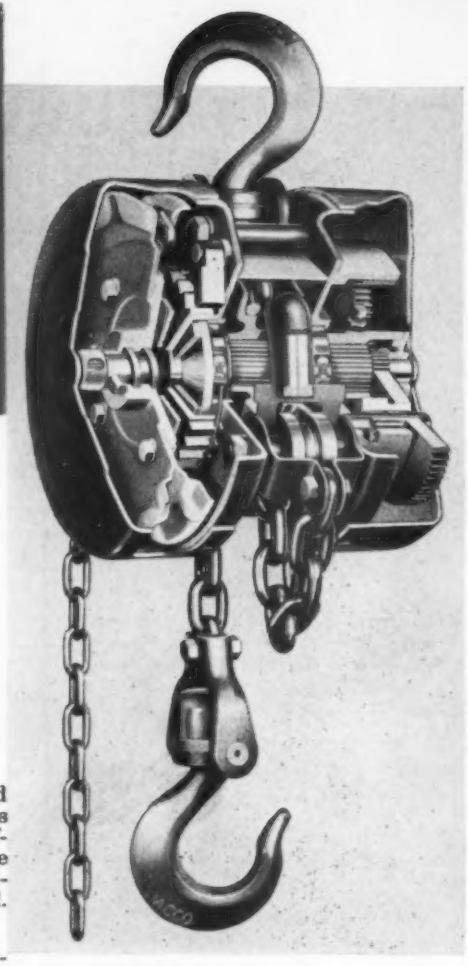
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9 Top Hook—Nickel-chrome-molybdenum alloy steel, drop-forged and heat-treated. Rocks and swivels will open before fracturing.

10 Top Crosshead—Alloy steel, drop-forged and heat-treated. Rocks in steel straps which are projection-welded to hoist frames stronger than the hook they support.

11 Hoist Frame—Two drawn steel sections of shock-resistant steel.

12 Driving Spindle—Nickel-chrome-molybdenum alloy steel. Machine-cut teeth. Operates on heavy-duty roller bearings. No cantilever loading.

13 Load Brake—Weston type with uniform composition lining and silent pawl. Effective whether hot or cold, wet or dusty.

14 Gear Train—Center planetary system using modified involute stub tooth form with all gear teeth generated from solid steel blanks.

15 Internal Gear—Nickel-chrome-molybdenum alloy steel with machine-cut teeth. Heat-treated and secured to frame by means of projection-welding.

16 Gears and Pinions—Nickel-chrome-molybdenum alloy steel with machine-cut teeth. Heat-treated and mounted on heavy-duty roller bearings.

17 Gear and Pinion Shafts—Stationarily-mounted alloy steel, surface-hardened and ground.

18 Pinion Cage—Ferrous alloy, is a spline fit to the load wheel shaft.

19 Bottom Hook Coupling—Alloy steel, forged and heat-treated, permits easy replacement of load chain. Load carried on forging itself, not on bolt or pin stronger than the hook it supports.

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ANOTHER CRITICAL TEST FOR PRIVATE ENTERPRISE

THERE is little doubt in anyone's mind but that the programs for National Defense and Industrial Mobilization will entail a return to some measure of national controls, priorities and allocations. The framework for such a control system has already been set up in the government. A significant feature of the program is that, in its initial stages at least, great reliance is being placed on voluntary action by industry. To the extent that such a voluntary system is effective in achieving the necessary ends of national interest, the need for stringent regulation will be mitigated and deferred.

For the second time in a decade, the ability and willingness of the American system of private enterprise to meet a national emergency is being put to a critical test. This test must be met, not as a question, but as a demonstration of the soundness of our system. A failure to meet the challenge would be more than giving comfort to those who oppose the American way. It would be a decisive defeat in the main issue of the battle of ideologies, as real as any setback on the military operations and much farther-reaching in its permanent implications.

One phase of this challenge concerns production. Though the goals are high, the problem is relatively simple. We have the plant, the power, the technology, the know-how, the manpower, and most of the materials to do that job.

The second phase is distribution. It presents a more difficult and more complicated problem, but without efficient distribution our pre-eminence in production will be seriously discounted. The gremlins of distribution—inventory hoarding, black markets, price inflation—have already reared their heads and must be summarily dealt with.

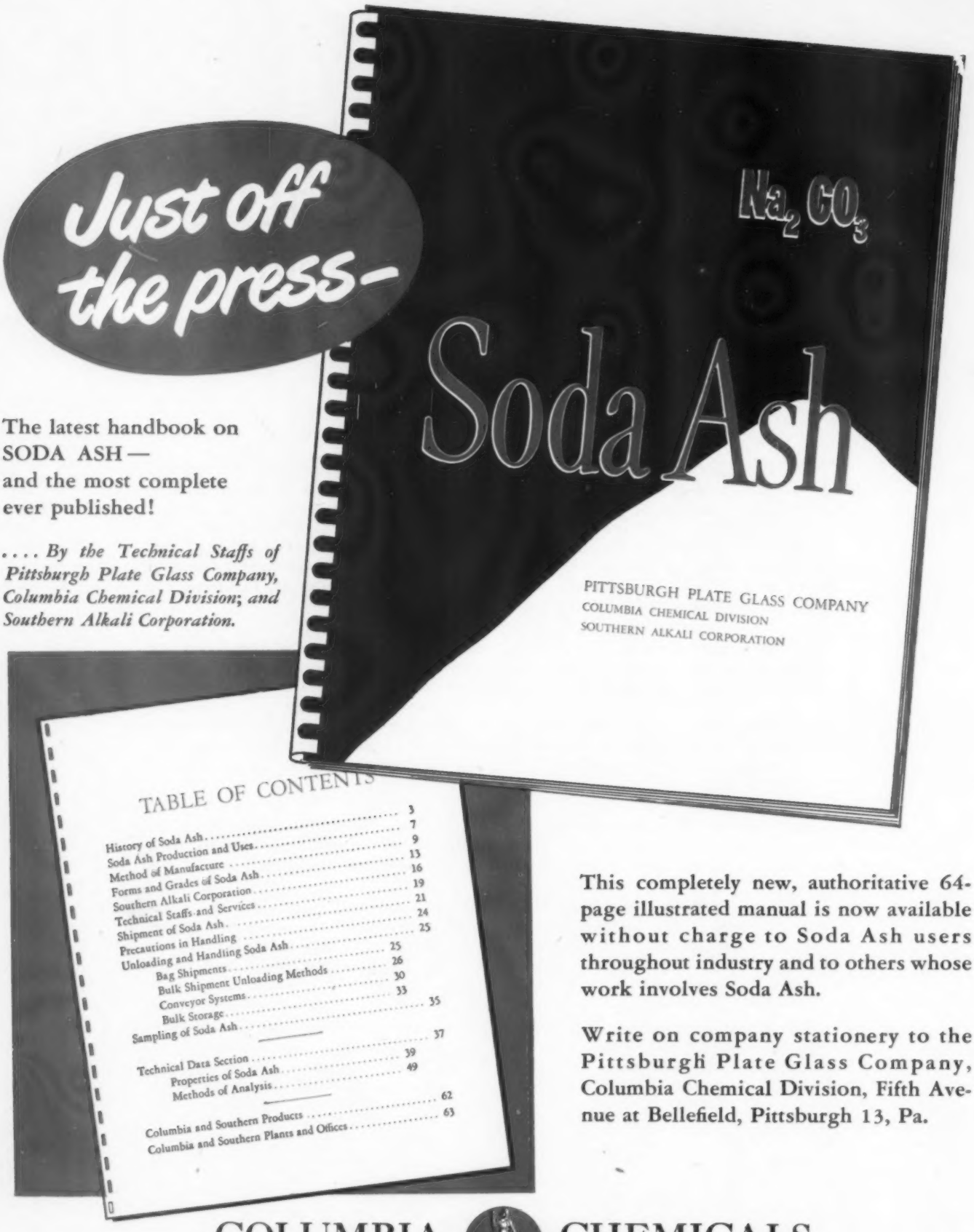
Purchasing agents are a vital factor in the industrial distribution system. How well they do their job in the critical days ahead will largely help determine the effectiveness with which private enterprise can meet the present emergency and demonstrate to the world the soundness of our economic and industrial structure.

Stuart F. Heinritz

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Highlights

This issue's important features summarized for the busy reader



Christmas in October? No, but it's not too early to get ready by deciding now what to do about that annual problem of handling **Christmas Gifts from Vendors**—to formulate a policy if you don't already have one, to see that everybody in your purchasing department knows about it, and to advise suppliers if that seems necessary and if it is a part of your plan. The article on page 79 will be helpful. It presents the experience and opinions of representative purchasing men. There's a rather wide range of opinion expressed, since it is one of those problems in which the evil is a matter of degree. Consensus is that flagrant abuse of the holiday gift practice is on the decline, and that the use of good judgment and common sense is the best answer.

Today's keen interest in **Cost Reduction** is considered in three articles in this issue, which, beyond their practical and timely information on distinct phases of operations, illustrate the broad possibilities that exist for a comprehensive approach to the subject. On page 116 is presented a story on **Stud Welding,** a new process offering economies in production and construction work. **Packaging** methods come under review on page 84, with specific instances of cost reduction amounting to substantial sums. The third approach is in respect to **Cost of Distribution** (page 89).



The crisis in Korea and the Defense Act of 1950 set the stage for **Industrial Mobilization**—the coordination of our national production facilities, military needs, and governmental policies affecting the industrial and economic program to meet the current emergency. On page 83 is outlined the governmental organization and the specific delegations of jurisdiction in the event that more stringent controls have to be imposed. There is a new governmental alphabet to be learned. Get in on the ground floor by getting acquainted with NPA and ESA, the new agencies that have been established within the past month. A heartening note for purchasing men is the fact that the new Administrator went through the last war as a procurement officer (see page 82). He speaks the buyer's language.

Further light on the coordination of **Military and Manufacturing** operations is contained in the story on page 100, which presents another of the timely papers developed in the recent Boffey Award Contest by the N.A.P.A. Committee on Education.

This month's **Guest Editorial** (page 71) is contributed by W. R. Murray, N.A.P.A. Vice President for District No. 9. Mr. Murray translates the present conditions into the practical terms of purchasing responsibility, stressing the need for flexibility and adaptability and foresight in a period of rapid change and unpredictable developments.

Public Purchasing is a subject of interest and moment to all purchasing men, from the professional and from the taxpayers' angle. An interesting and progressive development has recently taken place in the reorganization of State purchasing in Oklahoma. It is described for you in the article on page 111.

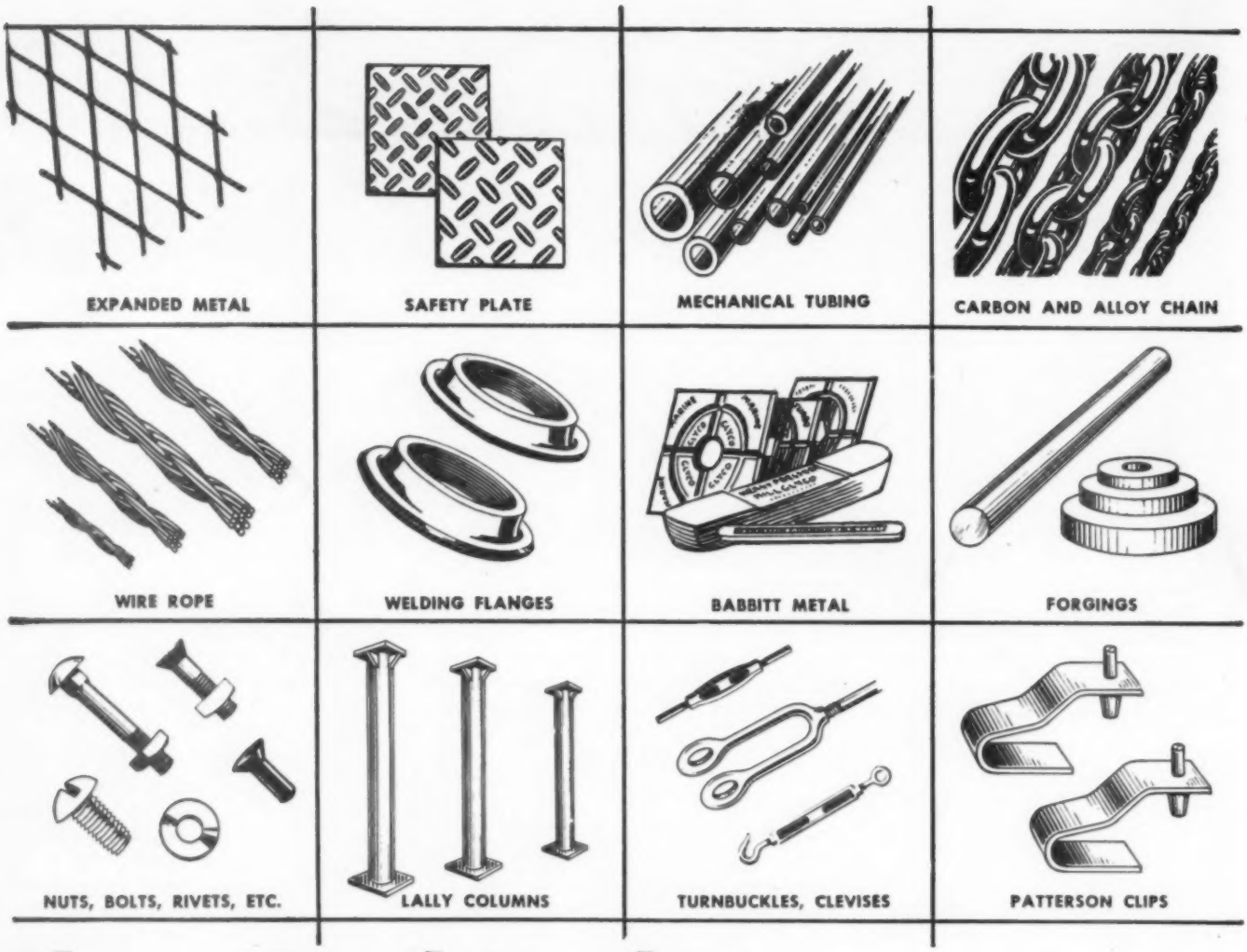


A large and urgent program of production for national defense will put the spotlight once more on **Expediting** as a vital part of the purchasing operation. In the past, this has been considered primarily from the buyer's viewpoint as to methods and results. On page 96, a purchasing man points out that the effectiveness of expediting depends upon how the supplier organization receives and responds to expediting effort. He has backed this up by going to supplier organizations to get the benefit of their thinking, and comes up with some practical suggestions on how you can get maximum results.

This month's purchasing opinion poll, reported on page 77, deals with a relatively new technique in selling—the growing application of **Visual Presentation** methods in salesmanship. In the days ahead you are going to be faced with more and more sales presentations built around graphic charts, working models, slide films, motion and sound pictures. What do you think of them? Do they help you in your job of buying? Compare your opinions with those of other purchasing agents.

There are always new angles and new ideas in the way the other fellow does his job. The purchasing organization and methods of the **Packard Motor Company** are presented for your study on page 91.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmetal policy. Another section is devoted to **Office Equipment and Forms** (page 179). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are also reported (page 130).



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Did you know that Ryerson is a convenient source not only for many kinds of steel, but also for scores of important related products? All items pictured here are available for prompt shipment in many types and a wide range of sizes. We invite you to call your nearby Ryerson plant.

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Want Additional Product Information? See Page 19.

This is a time for nimbleness of decision and action to meet changing conditions

Today's P. A. Must be Fast on His Feet

By W. R. Murray



ARE you fast on your feet? How fast can you change your buying practice? How fast can you change the attitude and thinking of your whole department? These questions may require answers from all of us sooner than you think. As this is being written, the spectre of war is again casting a shadow over all of us. In addition to the "police action" taking place in Korea, President Truman has announced that we will shortly have at least 3,000,000 men in uniform.

During the past four or five years it was pretty generally concluded that not only the folks who grew up in the purchasing business during the war years, but all of us, would need to change the habits which had been formed during the controlled war time conditions. It was agreed that we all must revise our thinking and particularly our relations with suppliers. Instead of being rubber stamps, it was time to start being real purchasing agents and recover the nearly lost art of negotiation.

● CONTINUED ON PAGE 72

W. R. ("Bill") Murray is General Purchasing Agent of the Bigelow-Sanford Carpet Company, Inc., with offices at Thompsonville, Conn. He is currently serving as Vice President of the National Association of Purchasing Agents, representing District 9, the New England area.

Bill is a native of Springfield, Mass., and earned his law degree at Northeastern University. He started with the Bigelow-Sanford organization in 1922, and shortly afterwards was assigned to the purchasing department. There his abilities as buyer and administrator were quickly recognized. In 1930 he was brought to the company's executive offices in New York City as Assistant General Purchasing Agent, and advanced to the position of General Purchasing Agent the following year. During this period he was a member of the New York Purchasing Agents Association. Subsequently, the entire purchasing department was moved to the Thompsonville plant offices, and he transferred his affiliation to the Western Massachusetts Association. Taking an active part in the affairs of this group, he has served as President, National Director, and on the Board of Directors. His election to the National Executive Committee was a natural sequel and a popular choice.

Known as an able and enthusiastic exponent of modern purchasing, he has been in frequent demand as a writer and speaker on purchasing subjects. At the recent N.A.P.A. convention in Cleveland, he was a member of the "Regional Round-Up" panel of the Business Survey Committee, where his presentation was notable both for sound business insight and analysis and for outspoken faith in the strength and vitality of New England industry.

The Murrays make their home in Longmeadow, Mass., a pleasant suburban community just over the state line from his place of business. There he is bringing up a family of three daughters and one son. He is a member of the Longmeadow Men's Club, Suffield Country Club, and various civic groups. His hobby interests are wide, including golf, wildfowl shooting, and photography, having in common the feature of outdoor life.

His active participation in the affairs of his professional association has the whole-hearted approval of his business colleagues. His immediate superior in the B-S organization—F. Albert Hayes, Vice President for Purchasing, and a past president of N.A.P.A.—was likewise sent to the National Executive Committee from District 9, being at that time (1940) Purchasing Agent for the American Hide & Leather Company, Boston. At the present writing, Al Hayes is making a personal tour of the wool producing areas of India, Australia, and New Zealand, so that Bill Murray has double responsibilities, dividing his time between the company's purchasing offices in Thompsonville and the executive offices in New York City.

There has been much discussion about the overall problem and many good, specific suggestions have been made which each individual purchasing agent has presumably used to the extent required by his own particular circumstances.

Normal conditions, or at least that rosy mirage which exists in our subconscious, never did return. But, how many of us would really like to return to that ten year period preceding World War II? From 1936 to 1941 most of our companies were emerging from the nation's most severe economic depression. Managements were learning how to cope with an entirely new era of labor relations and the problems inevitably following in its wake. While business was up and down at the time, there were no real shortages. Actually, there was so much of everything that compared with the current period, forward buying was relatively limited. Dealer's shelves were so well stocked that our inventories of many items could be kept at minimums.

Conditions Rapidly Reversed

From that comparatively easy going period, the purchasing man jumped over night into a war economy with stocks of manufactured goods disappearing from the shelves faster than you could write a purchase order. You will recall that key men and women disappeared from our staffs nearly as rapidly as the goods left the shelves.

None of us need be reminded that along with these handicaps, we were also required to cope with a situation combined of shortages, high demand, controls of all sorts and entirely new, frequently inept, rules which were written faster than they could possibly be learned. And in addition, some of us were producing entirely foreign products requiring totally new materials from heretofore unheard of suppliers. That took some fairly fast movement of the feet.

With fervent thanksgiving, the books were closed on all of that about four years ago to embark on what we all naively hoped would be a return to "normal" peace time conditions. Right off the bat there was no little amount of commotion and confusion. Our men and women were returning from the armed services. Some of the folks were settling in new jobs. Business was booming and staffs were enlarged. As most of the war time controls were eliminated, we commenced to re-train our personnel, rewrite some of our policies and procedures and, subconsciously perhaps, made ready to settle down once again for "business as usual."

After turning many corners, it gradually dawned on most of us that business was going to be neither "usual" nor "normal." What with the unprecedented demand born of the war, strikes, and one thing or another, there continued to be shortages, long time deliveries, violently fluctuating prices and the "price at time of delivery" never did leave us.

And yet purchasing agents, generally, somehow managed to remain nimble enough to keep pace with all of these rapid and frequent changes in the ground rules.

Later Than You Think

This summer, when most of us were thinking of vacations, the so-called "police action" was undertaken in Korea and of this date, has assumed all the aspects of a full fledged war. It has reached the stage where the Government apparently feels it is necessary to call some 3,000,000 men and women to the colors. That it will take a lot of everything to equip and maintain 3,000,000 people, no one will deny. Can we suddenly take that many people off the farms and out of industry without interfering with production to some extent? Is it certain the number will be limited to 3,000,000?

It all adds up to a contraction in the production of civilian goods. It spells more shortages, longer deliveries and further forward buying for all of the materials and products required by industry, whether you are producing civilian goods or the materiel necessary to win a war.

To every purchasing department, it means eventually another revision of our outlook and some mighty vital forward planning right soon.

While it is reasonably certain that there will be controls, no one at the moment can predict with any assurance specifically what they will be. Wars do not follow an identical pattern as to the details. Neither the shortages of the last war nor the material required will necessarily be the same in the next. You can be sure only that we will have controls, shortages and many surprises. While it looks like another time to be fast on our feet, in what direction are we going to move? Are there any measures which we can take or are there any problems concerning which we can be thinking up possible solutions? Likely, there are many but the obvious approaches worth considering strike the eye at the outset.

Many companies have already made a survey of the military status of their key people and some estimate can now be made of the men most likely to enter the services.

Managements will be giving careful consideration to the degree or direction in which each company can participate in the preparedness effort now facing all of us. It goes, almost without saying, that every purchasing agent will keep himself well informed from week to week concerning his current company policy in this respect. On the two subjects on which every purchasing agent is supposed to be an expert, market conditions and available supply, we can naturally assume that he will be prepared to offer timely advice and suggestions when they are called for, or even voluntarily at propitious moments.

Are we all satisfied with our present lines of communication with production and planning departments? Each of us can answer that one best for himself. But if you are not presently receiving your information on future requirements fast enough to be useful when your production is presumably concentrated on routine peace time pursuits, think what may happen when you become engaged with unfamiliar products. Would not this be an area that might be explored with profit while we are keeping an eye on the unknown?

We Must Plan Now

Beyond question there will be many controls, unnecessary though they may seem to most of us, which will require reading, understanding, liaison with other departments and application in our own. It is not too early to start planning, at least on paper, what we will need in our own departments in the form of a skeleton organization.

Do not overlook what other departments may be doing along this line. The idea is to coordinate, not duplicate.

Those are a few of the obvious steps which might be considered and indubitably there are others. Surely, we all hope that none of them will prove to be necessary. But, are we going to operate by planning or by expediency? Is it not the time again to keep poised and to be prepared to jump in all directions? In other words, is this not another opportunity for you as purchasing agents to be fast on your feet?

To get the right answers – ask the right questions of people on the job

Solving Problems of Business Procedure

By W. J. Granberg

IT has been something like 2300 years since Socrates strolled around Athens, developing a philosophy merely by asking questions. Today, however, that venerable philosopher stands as the silent partner in Socratic-like conferences which are solving business and industrial problems in general and, in particular, improving purchasing procedures and training new employees effectively.

One man who has effectively enlisted this ghostly aide is Robert S. Boaz, of Seattle, Wash., who operates as the Personnel Development Service in conducting conferences which he insists must be "oral interchanges of thinking on an organized basis". The conventional conference, conducted by an employer or his assistant, often deteriorates into a talk-fest which is not directed toward solving a specific problem and attaining a definite goal and thus is in direct contrast to the method used by Boaz which utilizes guided questions from the leader to elicit answers from employes that in themselves constitute the solution.

The goal of the Socratic conference method is to use the best thinking of the group mind, applying the combined experience and knowledge of the members toward solving a problem, with the "boss" doing no "telling". Applied to purchasing, as it has been in production, accounting, safety, waste control, and sales, Boaz's technique has proven valuable in developing new and more efficient and economical purchasing procedures, in changing firm policy, and in training new employees.

Experience has taught Boaz that the most effective conference consists of from 8 to 12 persons; a larger number does not permit everyone to take part easily. In setting up a training program in a purchasing department Boaz works only with supervisory personnel. His first step is to draw up a Problem Analysis Pattern which specifies and clarifies, through questioning only, the duties of each employee and presents the manpower causes of the problems which have arisen in each job. Next, an Instruction Guide is drawn up for each job, specifying what is to be done and how each task is to be done, listing every step in its performance.

The net results of such a presentation of each job are threefold. First, the duties of each employee are clarified; second, the manpower failures are corrected; third, the supervisor has a definite training guide at hand for instructing new employees. The general, overall result is that purchasing procedure has been tightened up materially, for each member of the department now knows how to correct his shortcomings. Boaz sees this result, too: the department's spirit and morale have

(Previous Instruction Covering Company Policy on Purchasing)
INSTRUCTOR'S GUIDE

JOB Purchasing Clerk DEPARTMENT Office

DUTY Getting All Information Needed to complete requisition on emergency breakdown. COMPILED BY Class

DATE October 22, 1949

WHAT IS TO BE DONE	HOW IS IT TO BE DONE
1. Check order against catalogue.	1. Get the file on equipment concerned.
1a. Check inventory for part (as standard).	1a. Look for time when needed. 2. Look for any changes previously made in the equipment.
(Stress importance of discussing with mechanic the need for complete info on manifold - order.)	3. Check parts number and name against catalogue. 4. On standard parts check number and name against his inventory (if in doubt check with master mechanic). Look for classification and then specification of part. 5. Keep duplicate catalogue for office at all times.
2. Check quantity.	1. Look for complete requirements on job and then check quantity against quantity quotation from Portland Office 2. Consider inventory investment in line with policy. 1a. Phone on emergency, or otherwise write. 1b. Check with master mechanic if in doubt of order after checking catalogue.
3. Check time requirements.	1. In emergency breakdown phone and then send confirming requisition. 1a. After working hours phone vendor. 2. Not emergency mail requisition by routine system. 3. Find out from master mechanic and confirm with Superintendent, the degree of emergency. 2a. If time when not needed clear with master mechanic.
4. Check routing of order.	1. Keep channel open with freight and express lines for changed schedule. 2. Keep up to date record of connecting freight lines. 3. Select method of shipment based on time involved and size of part. 4. Show routing wanted on requisition or vendor if call direct.

been improved through the fact the conferences have made every employee feel he is a member of a tight little team that functions as a unit, efficiently and smoothly.

One outstanding feature of the Socratic method of conference is the ready acceptance by employees of new ideas and changes in procedure, simply because they thought of them themselves—no one told them. Employees do not approach such a conference with a negative and defensive attitude toward the "boss" and his ideas, nor do they leave it with a "yes, boss" attitude all the way down the line, and do nothing.

"Pride of ownership does it," Boaz says. "In a conference where employees do the talking in response to questions guided along specific lines toward solving definite problems, the answers and the ideas belong to the employees—and they love them! Faulty reasoning, uncooperative attitudes and mistakes in procedure fall by the wayside when men get together and talk out loud,"Boaz adds.

He relies heavily on co-ordinated thinking and group dynamics, along with the sum of the knowledge and experience of those in a conference, to solve business procedure problems. Say, for example, there are eight men in a conference who have been in the purchasing department for anywhere from 1 to 15 years. Their aggregate time on the job may amount to 50 to 60 years, and it is the best thinking of a group mind with that cumulative experience which Boaz finds drawn out by proper questioning.

He has learned that the relatively simplest chore of a purchasing clerk often needs clarification in order to make it efficient and economical. When such a job has been analyzed and its problems specified, the result is an Instructor's Guide for training new employees as well as for increasing the efficiency of the present staff. When the range of duties pertaining to a particular position has been similarly canvassed, discussed, and clarified, the result is not merely a complete job analysis or specification, but a standard practice instruction that embodies the experience and suggestions of all concerned as to the best way of doing that job.

The Instructor's Guide sheet shown herewith was evolved from such a conference. Suppose there is an emergency breakdown of equipment in the plant, and a requisition is rushed to the purchasing department for replacement parts—

What must be done?

What is the first step?

Whose job is it?

What is the best way of getting the desired result?

Etc.

Out of the ensuing discussion, a procedure is developed and put into writing. It is devoutly hoped that this particular situation will not come up—at least, not very frequently. But when the occasion does arise, nobody gets into a dither, or goes off at a tangent, or overlooks some important detail. The purchasing clerk knows his responsibility, and has a check list of procedure for systematically doing the job right. He has confidence in the method, because he has agreed that it is the best; he has pride and enthusiasm in the chore because, after all, it was his own idea.

Back Door Interview



THE purchasing agent for a well known eastern manufacturing company was making one of his periodical tours of the plant when he met a stranger briskly coming in through the employees' entrance with a familiar wave to the gateman. The stranger was momentarily taken aback by this unexpected encounter, but quickly recovered his composure.

"You're Mr. B, aren't you—the purchasing agent?" he asked.

"That's right."

"I'd like to introduce myself. I represent the XYZ Company. You buy 100 pounds of our compound every month or so for the tool room."

"Yes,I remember." The P.A. did recall the recurring requisitions, with specified brand. It was only a small item, and he had passed it automatically, on the assumption that it was a special material. There had been a mental note to look into it more thoroughly, some time, but matters of greater import had kept putting it off."

"The foreman seems to like our stuff, and he especially likes our service," the salesman continued. "Knowing how busy you are, I haven't bothered you—just drop in here from time to time and have him write up the requisition."

"Never too busy to see a salesman," the buyer assured him. "That's part of my job."

"Sure, but with all you have to do, this is only peanuts; and since this is the only place in the plant using our product, it seemed simpler to handle it direct."

"Too bad you didn't come to see me," said the P.A. "You're right that this is the only department where your compound has been used, but I buy 500 pounds a week from your competitor, for the finishing department."

The salesman's jaw dropped. "Why doesn't some one tell me these things?" he complained.

"You see," the P.A. continued, "what you've been doing is not merely by-passing the purchasing department; you've been by-passing just about 95% of our business in your line, which is placed through the purchasing department."

"Well, thanks for the information," the salesman said, lamely.

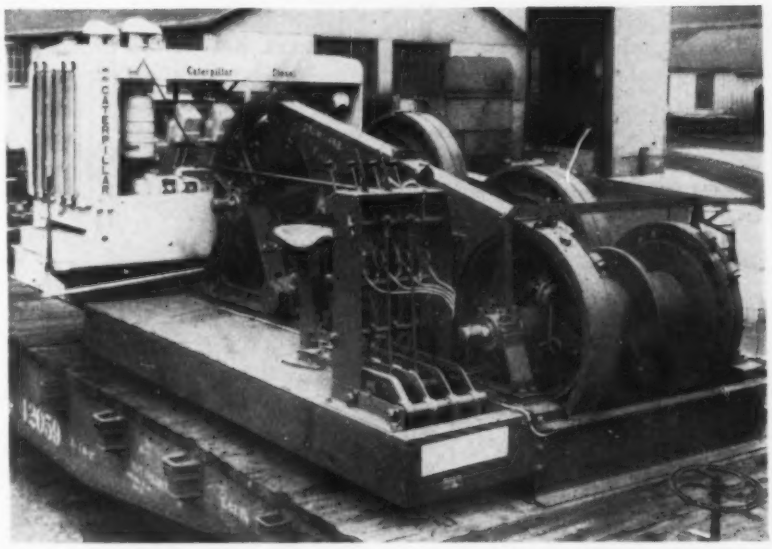
"Not at all. Thank *you,*" the buyer countered. This has been really helpful. As you say, your little monthly order is peanuts, but peanuts are an awful nuisance in the purchasing operation. With the information you've given me, it will be very simple to eliminate this particular peanut and combine this small requirement with our regular contract. We get pretty good service on that, too. Come up and see me some time."

"And that," said the purchasing agent, as he related the incident, "is how I met one of our former suppliers."

An ounce of prevention . . . . .

Don't Let Rust Ruin Your Purchases

By Tyler G. Hicks



Rust will quickly attack exposed and working parts of machines if they are not properly protected during shipment and storage.

IRON and steel machine parts have one annoying characteristic—they are extremely susceptible to certain of nature's most abundant corrosive materials. Oxygen and water, when allowed to react freely with iron or steel, will quickly produce rust and impair operation or appearance of the machine. The value of a purchase may be considerably reduced or lost entirely, according to the amount of rust formed. Let's take a look at rust, see what causes it, and how we can prevent it from ruining our purchases.

The Rusting Reaction

Rust respects only a few inhibitors. It will form anywhere, regardless of whether the machine is operating or in storage. The familiar reddish mold we call rust is actually iron oxide and resembles iron ore in many respects. When iron ore is processed, the oxygen is removed and almost pure metal obtained. This metal, after addition of small amounts of other metals, is the principal material in most modern machines. So long as it remains nearly pure iron or steel, little trouble will be encountered during machine operation or storage. Once rusting starts, however, machine operation may be poor and unreliable.

When iron or steel rusts it returns to its original oxide form. Nature is continually trying to cause rust, reducing the usefulness of the pure iron. Oxygen and water are nature's principal weapons in her battle to recover the metals which man has processed. Man's principal weapons against rusting are oils, greases, paints, petroleum base compounds, and air-tight containers. When properly applied they will insure the immediate usefulness of the metal and prolong its life for many years.

Rust forms anywhere, but when it attacks working members of machines it is dangerous and costly. Exterior surfaces of machines are just as susceptible as working parts, but the damage is usually less costly. In general, a machine which is properly operated will rust less than one which is idle or in storage and unprotected. Most lubricants provide a sufficient amount of protection against rusting, but where severe corrosive conditions exist, special lubricants must be used. Air operated tools, hydraulic equipment, steam turbines, internal combustion engines, and paper machines are a few of the units which may require special lubricants to prevent rust.

Stored machines, such as those purchased as replacements for existing equipment, require special care. air out of small parts and thereby prevent rusting. Large units which cannot be conveniently packaged must be protected with oil, petroleum base compounds, grease, or paint. Usually, more than one of these agents is required for adequate protection of large machines.
Air-tight packages will keep moist

Preventatives Available

Many petroleum, paint, and other firms have developed materials suitable for rust prevention under varying conditions. They can be broadly classified as:

(a) *Oils*:

1. Lubricants for machines where excessive air and moisture is encountered (hydraulic systems, steam turbines).

2. Manufacturing and packaged storage rust preventatives (all types of equipment).

3. Internal combustion engine storage and shipping oils.

(b) *Greases*: Many grades recommended for particular services are available with a rust preventative which experience has shown suitable. Preventatives are included in some greases as a matter of policy since

they are never harmful under ordinary operating conditions. Only where operating or storage conditions depart markedly from normal need special rust preventatives be considered. In all cases, however, grease purchase is based first on lubrication requirements and secondly on rust prevention needed.

(c) *Petroleum base compounds*: Protection for longer periods is usually obtained with compound than with oils. Compounds can be brushed or sprayed onto the part, or the part dipped into a hot bath of the compound. Rust preventative compounds are manufactured solely for this purpose and cannot be used as lubricants. They are well adaptable for both indoor and outdoor storage of purchases. A solvent is used for compound removal. Compounds do not harden while in use.

(d) *Paints*: A large number of paints are available which are well suited for rust prevention. Many of these provide the needed protection and at the same time give a pleasing finish. Selection should be based on anticipated storage or operating temperatures and humidities.

(e) *Air-tight containers*: Packaging practices vary widely according to the article. Important phases of packaging from the purchasing agent's standpoint will be discussed.

Getting the Most from Preventatives

Well planned purchasing can do much to reduce losses from rust. Purchase orders which specify completely and accurately the atmospheric conditions which the machine must withstand during storage and use will insure adequate protection. Rigid inspection of purchased goods when they arrive will indicate the effectiveness of the rust preventative. Where purchases must be stored for long periods, frequent inspections of the machine or its package will aid in quickly spotting harmful breaks or failure of the preventative. Since some rust preventatives are easily damaged or rendered ineffective, they must receive careful handling during delivery and storage.

Greaseproof paper wrappings, often used for small parts, are designed to prevent absorption of the rust preventative. Replacement of the paper with another type may cause rusting because the preventative will be absorbed where the part touches the paper. In addition, many greaseproof papers are also waterproof, and removal of the protecting surface allows moisture to condense on the part.

Where machines are wrapped or coated with a rust preventative and then crated, each unit should be carefully inspected at the receiving department to see that movement has not broken the wrapping. If crate wood contains large amounts of moisture or rosin, removal of the crate is necessary to prevent a high moisture content in the air surrounding the unit.

For delicate machinery, such as aircraft engines, assembled electronic devices, and other equipment which is easily damaged by moisture, vapor-proof packages are often used. A canister containing a dehydrating agent is usually included in the package. Since the quantity of moisture which the dehydrating agent can absorb is limited, its effective life should be requested when the purchase order is sent through. In this way there will be no danger of storing the unit for too long a period. When the purchased item is completely immersed in a rust preventative, container cover must not be removed until the part is to be used.

Existing Equipment

The purchasing agent's principal problem in rust prevention is usually concerned with protection of newly purchased equipment. There are times, however, when existing equipment must be laid up or stored for periods of varying duration. At such times the purchasing agent is interested in prolonging the life of this equipment and preventing unnecessary purchases in the future. A knowledge of how and what to purchase for rust prevention in existing equipment is therefore important. The usual purchasing problem encountered with this equipment can be conveniently divided into three parts: cleaning, drying, and preventative application.

A rust preventative offers little protection to surfaces coated with dust, oil, grease, water, perspiration, or abrasives left over from manufacturing operations. Thorough cleaning before application is therefore necessary. Since the effectiveness of a cleansing agent is dependent on many factors, extreme care is necessary when purchasing one.

Petroleum solvents, such as dry cleaning naphtha and Stoddard solvent, are generally satisfactory for oil and grease removal. Methyl alcohol in conjunction with either of the above solvents is good for removal of perspiration. Gasolines which contain tetraethyl lead are not suitable for machine cleaning and should never be purchased for this purpose.

Vapor solvents which are passed over the machine to be cleaned while confined in a closed cabinet are safe only if non-inflammable. Chlorinated solvents are usually specified for this type of cleaning. Carbon tetrachloride is unsuitable for vapor cleaning because it may react with any water present to form a corrosive product. Even chlorinated solvents must be frequently checked to see that no free acid has been formed. If it has, acid should be neutralized or the solvent replaced before it is applied.

Alkaline solutions, usually sold in dilute concentration, are excellent for removal of all types of dirt from iron and steel parts. Where working surfaces are highly polished, alkaline solutions may leave a coating of salt. Hence, they are not used for these surfaces. The best cleaning action is obtained when the solution is sprayed onto the part or the part dipped into it with solution temperature between 175F and 200F. A complete flushing of the part with hot water after application of the solution will insure thorough cleaning. Alkaline solutions should never be purchased for cleaning the light metals—aluminum, magnesium, and zinc. They react with these metals and cause increased corrosion.

Complete drying of the cleaned part is necessary before application of the rust preventative. Lintless cloth, compressed air jets, or an oven can be purchased for this work. Drying method used depends on machine size, number to be cleaned, and men available for the work. Part being dried should never be touched or allowed to become cold before the rust preventative is applied.

Application

Brush, spray, or dip application is suitable for all rust preventatives, the method selected being dependent on machine size and construction. Where application equipment is supplied by the firm manufacturing the preventative, it should be purchased from them because better results will usually be obtained. As a general guide in preventative application, it can be assumed that the thicker the film, the better the protection.

Rust prevention in purchased and stored equipment is relatively easy today. The firms manufacturing preventatives have made it so by their extensive studies and tests. Knowing the types of preventatives available, how they should be handled, and where to look for rust, the purchasing agent is in a good position to protect all equipment he buys.

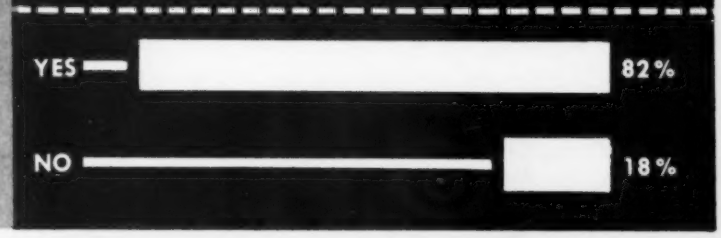
How Effective and Helpful is VISUAL SALES PRESENTATION?

Great strides have been made in the development of audio-visual techniques for the presentation of product information, through the use of charts, films, working models, etc. The methods are intended to supplement the conventional means of printed matter and personal salesmanship. These new methods naturally have been directed more and more toward purchasing agents. We have tried to determine the effect of visual presentations on purchasing men, and how they rate the effectiveness of such methods as sales tools.

1 (a) Do you find any substantial number of salesmen making use of modern visual methods in the presentation of their sales story ?



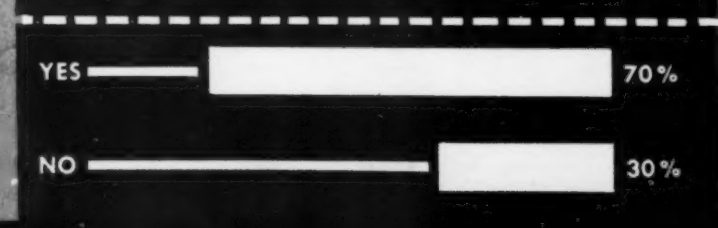
(b) Would you welcome more extensive use of these methods ?



2 (a) Do you find these methods more interesting and helpful than the conventional sales interview ?



(b) In your opinion, does the complete and logical presentation of the prepared visual method compensate for the loss of flexibility adapted to a particular case ?



❸ (a) Do you find such presentations more time-consuming than the conventional interview ?

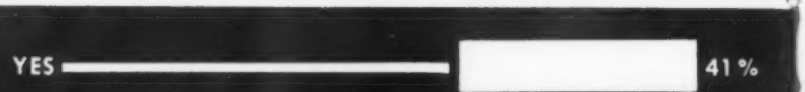


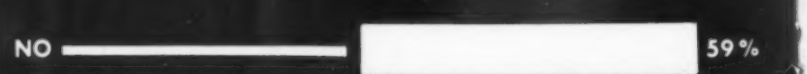
(b) If so, are you willing to allot more than the usual amount of time for such a presentation ?





❹ In your opinion, is the salesman inclined to rely too heavily on the visual presentation, in place of personal product knowledge and salesmanship ?



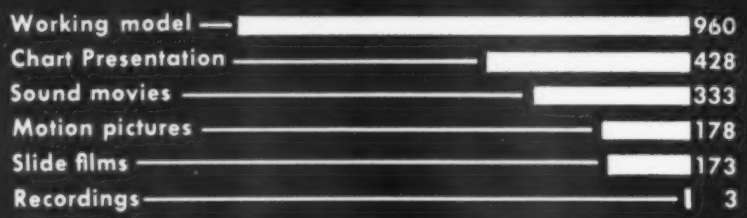


❺ Where visual methods are applicable to the product under consideration, which methods impress you most favorably ?

(Please rate 1, 2, 3 etc.)

Working models were named as first choice by a margin of 4 to 1.

Weighted rating of buyers' preference using 1st, 2nd, and 3rd place mentions:



WHAT THEY SAY

"As an initial sales approach they are not as acceptable to me as they are after the ground floor has been laid by a well-qualified representative who has shown the need or possibilities of his product. Then they are excellent."

"Salesmen are better fortified with drafts, charts, models and test reports than they have been for some time. This takes up more time at the moment but presents a better layout for consideration by research, engineering and operating units."

"Majority of salesmen lack sales training and product know-how. Visual aids help to overcome these deficiencies by providing clearer explanations and giving some coherence to a presentation."

"This method of audio-visual sales technique may become as essential and as preferable as TV is now becoming in preference to radio and movies."

". . . colored film shown not only to P.A. but to foremen and other department operators has proven its value. Retention of ideas by operators lasts many years. Film, while taking more time, covers so much more than sales can ever tell."

"Perhaps it is unnecessary to say, but no presentation is of value unless made by a thoroughly reliable and trustworthy, capable seller."

"I like salesmen to present a model. All the rest is tommyrot."

"In industry you have to buy the steak — not the sizzle."

"We have requested several companies to come in with models, movies, or slides to present their story to numerous interested persons as a group, rather than separate interviews."

The perennial problem of gifts from vendors



Do Purchasing Agents Believe in Santa Claus?

PERENNIAL and moot, the subject of holiday giving by suppliers to members of the purchasing department is of wide interest. To get a comprehensive and authoritative first-hand picture of this situation as it exists today, and the current thinking of purchasing men on this seasonal topic, PURCHASING submitted the following questions to representative purchasing agents in every section of the country and invited their comment:

Do your departmental policies forbid acceptance of any and all holiday remembrances from suppliers?

Do you send a notice to that effect to suppliers?

Where does friendship end and business commence—at a quart or a case?

Do you draw the line between advertising pieces and what are obviously expensive gifts?

Does your sales department distribute holiday remembrances?

The replies were frank and illuminating. They indicate that, on the whole, "Christmas gifting" is not considered as critical an issue as was the case a few years back, that it is scarcely to be rated as a controversial subject, and though some donors may occasionally be inclined to be over-generous, purchasing agents by and large see nothing sinister in current practices under present policies and controls.

The big majority of purchasing agents participating in this symposium express the thought that there is no objection to department members accepting holiday remembrances of moderate intrinsic value. It is the feeling that men in purchasing today have a well defined concept of their responsibilities as buyers, would reject any gifts that might reflect upon their integrity, and are well qualified to analyze a giver and his motives as well as a gift itself. In short, the rule of common sense applies both to the giver and to the recipient.

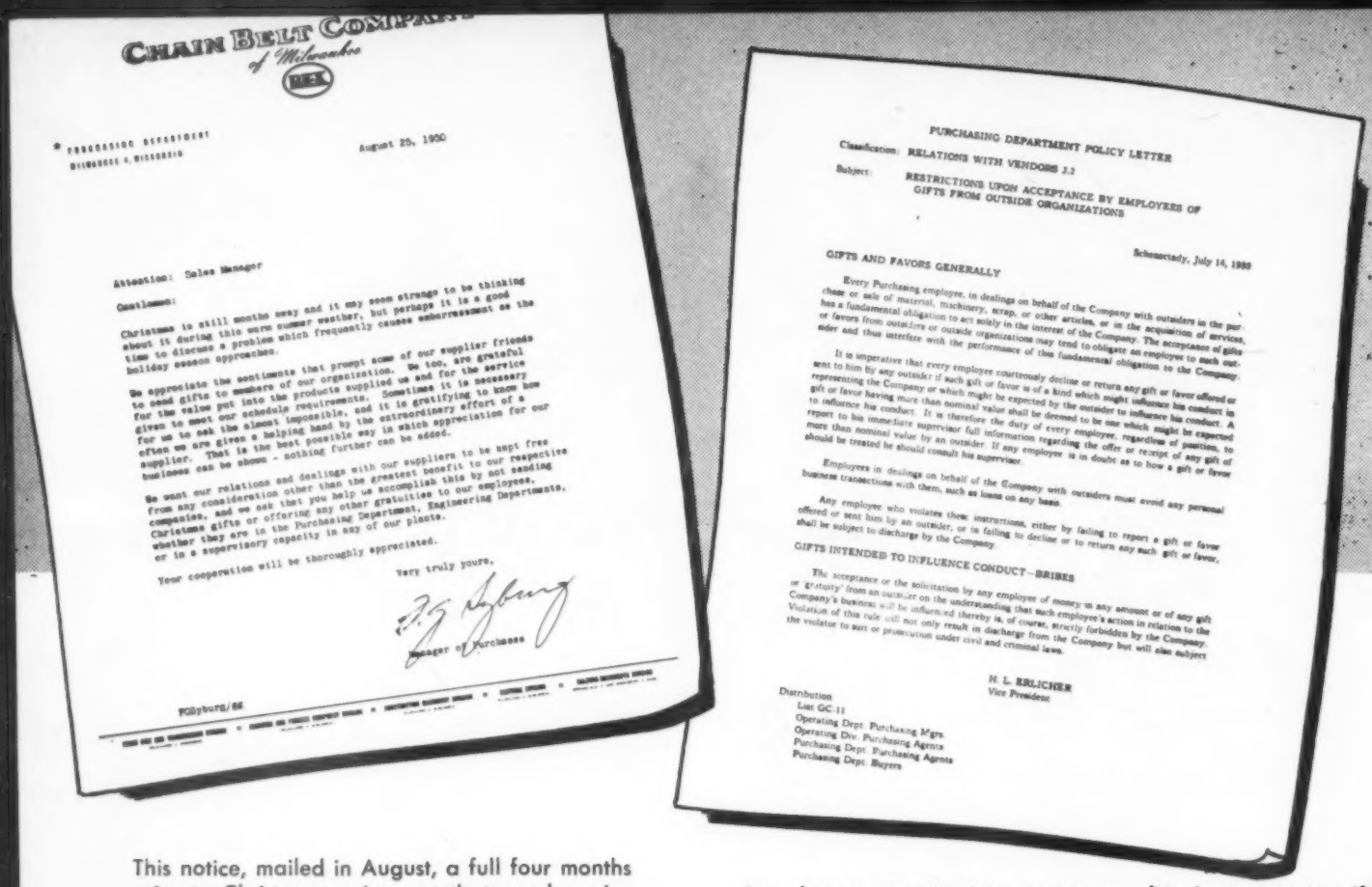
All who replied evidence their opposition to the acceptance of what may be termed expensive gifts, though with two or three exceptions they have no objection to the acceptance of gifts of nominal value. This value is placed by some at $5 to $10 —"a quart, but not a case." It is felt that such maximum values can hardly come within the scope of commercial bribery, nor be of sufficient moment to prejudice a buyer. Nobody "gets hurt" by such gifts, and certainly men who are spending many thousands of dollars—hundreds of thousands and even millions—would hardly receive a demoralizing impact from gifts representing such values. No objection is voiced to the acceptance of gifts that come within the scope of being essentially advertising media—pens and ballpoints, diaries, empty wallets, and the like.

Only 10% of the writers report that letters are sent to suppliers asking that gifts not be sent. Fewer still impose a regulation requiring the return of gifts. The recipient is generally expected to let his conscience be his guide. In some instances, buyers are required to return gifts that might be evaluated as expensive; in others, to avoid embarrassment and injured feelings, such gifts may be retained, though givers are personally asked to discontinue the practice to avoid embarrassment to the buyer.

In this connection, attention is called to the bulletin issued by the Purchasing Department of General Electric Company, which instructs that recipients must report to their immediate supervisor the offer or receipt of gifts of more than nominal value. The departmental conscience may be more strict than that of the individual.

Veteran purchasing agents report that the practice is on the decline. The waning practice is also reflected in the reports of the purchasing agents' own sales departments' distribution of gifts. In some cases where the sales department does send remembrances to customers, the buyer admits having some difficulty in understanding why an "18th Amendment" should apply to purchasing men.

Purchasing men subscribe to a code that calls upon them to "denounce all forms and manifestations of commercial bribery." The problem of each one is to decide whether a holiday remembrance violates the spirit of this code. Sense of the re-



CHAIN BELT COMPANY of Milwaukee

August 25, 1950

Attention: Sales Manager

Gentlemen:

Christmas is still months away and it may seem strange to be thinking about it during this warm summer weather, but perhaps it is a good time to discuss a problem which frequently causes embarrassment as the holiday season approaches.

We appreciate the sentiments that prompt some of our supplier friends to send gifts to members of our organization. Be too, are grateful for the value put into the products supplied us and for the service given to meet our schedule requirements. Sometimes it is necessary for us to ask the almost impossible, and it is gratifying to know how often we are given a helping hand by the extraordinary effort of a supplier. That is the best possible way in which appreciation for our business can be shown - nothing further can be added.

We want our relations and dealings with our suppliers to be kept free from any consideration other than the greatest benefit to our respective companies, and we ask that you help us accomplish this by not sending Christmas gifts or offering any other gratuities to our employees, whether they are in the Purchasing Department, Engineering Department, or in a supervisory capacity in any of our plants.

Your cooperation will be thoroughly appreciated.

Very truly yours,

Manager of Purchases

PURCHASING DEPARTMENT POLICY LETTER

Classification: RELATIONS WITH VENDORS 3.2

Subject: RESTRICTIONS UPON ACCEPTANCE BY EMPLOYEES OF GIFTS FROM OUTSIDE ORGANIZATIONS

Schenectady, July 14, 1950

GIFTS AND FAVORS GENERALLY

Every Purchasing employee, in dealings on behalf of the Company with outsiders in the purchase or sale of material, machinery, scrap, or other articles, or in the acquisition of services, has a fundamental obligation to act solely in the interest of the Company. The acceptance of gifts or favors from outsiders or outside organizations may tend to obligate an employee to such outsider and thus interfere with the performance of this fundamental obligation to the Company.

It is imperative that every employee courteously decline or return any gift or favor offered or sent to him by any outsider if such gift or favor is of a kind which might influence his conduct in representing the Company or which might be expected by the outsider to influence his conduct. A gift or favor having more than nominal value shall be deemed to be one which might be expected to influence his conduct. It is therefore the duty of every employee, regardless of position, to report to his immediate supervisor full information regarding the offer or receipt of any gift of more than nominal value by an outsider. If any employee is in doubt as to how a gift or favor should be treated he should consult his supervisor.

Employees in dealings on behalf of the Company with outsiders must avoid any personal business transactions with them, such as loans on any basis.

Any employee who violates these instructions, either by failing to report a gift or favor offered or sent him by an outsider, or in failing to decline or to return any such gift or favor, shall be subject to discharge by the Company.

GIFTS INTENDED TO INFLUENCE CONDUCT—BRIBES

The acceptance or the solicitation by any employee of money in any amount or of any gift or gratuity from an outsider on the understanding that such employee's action in relation to the Company's business will be influenced thereby is, of course, strictly forbidden by the Company. Violation of this rule will not only result in discharge from the Company but will also subject the violator to suit or prosecution under civil and criminal laws.

H. L. ERLICHER
Vice President

Distribution
List GC-11
Operating Dept. Purchasing Mgrs.
Operating Div. Purchasing Agents
Purchasing Dept. Purchasing Agents
Purchasing Dept. Buyers

This notice, mailed in August, a full four months prior to Christmas, points out that good service is the supplier's best way of showing appreciation for the buyer's business.

In a larger organization, company policy in respect to gifts from vendors can best be clarified in a specific, comprehensive statement to guide all purchasing personnel.

plies is that the practice of "Christmas gifting" is deep rooted and difficult to eliminate completely; that it is in most cases primarily a friendly gesture; that Santa Supplier is not necessarily a malicious malefactor seeking to undermine the moral fibre of men who buy, and that his holiday giving is born of the holiday spirit rather than rapacity.

A wide range of opinion is expressed. Here are a few typical comments culled from the replies:

Handle with Judgment

New York: "We depend upon our buyers to use judgment in the acceptance of Christmas gifts. Our unwritten policy is to accept gifts which are obviously a token of friendly relationships between buyer and seller. We would not customarily accept gifts from concerns who have not been regular suppliers, who were seeking orders, or currently quoting competitively on substantial business. We believe commercial bribery is relative. The gift from a company with whom you have done substantial business over a period of years might reasonably be two or three bottles without being in any sense embarrassing to the buyer, whereas a gift of one bottle from a company whose share in our business has been very small might be considered in bad taste. Our buyers are selected for personal integrity, and we depend upon them to conduct themselves and their associations with our vendors in a way which will not create embarrassment."

Wisconsin: "We send out a letter each year to suppliers, requesting that they refrain from sending Christmas gifts to anyone in our organization. It has cut down gifts by approximately 90%. Our policy to the remaining 10% is to return if the value exceeds $5. Perishable goods such as fruits, and personalized small gifts are accepted, but we endeavor to graciously impress upon the donor that it is not necessary and we would prefer it if he didn't send a gift. Acceptance of liquor in any size or quantity is absolutely taboo. Our sales department, up to three years ago, used to send out inexpensive packages; this practice has been discontinued."

Letters Disregarded

Connecticut: "We have definite company policies which forbid acceptance of any and all holiday remembrances. A letter is sent to vendors in the early part of December with respect to the company's position toward Christmas gifting. Some firms disregard our wishes. It is our custom to return gifts not considered as advertising specialties."

Ohio: "Our policy is that remembrances be accepted only to the extent that the recipient does not feel any sense of obligation to the giver. If you know of anyone with my initials, I have quite a supply of billfolds he could use."

Tennessee: "Personally, I feel that it is good business to exchange gifts, and cannot understand why some companies forbid the practice unless they do not trust the employees doing their purchasing. I do not believe that any purchasing agent would let a small Christmas present influence him to favor one supplier over another."

No Cadillacs

Massachusetts: "Several salesmen have been calling on us for 20 years or more, and we do not feel that their small gifts are anything except tokens of friendship and good will. Of course, if there were any Cadillacs or gifts of a similar nature, we would investigate and put an end to it all."

Canada: "I think the purchasing agent is the one who can, in his contacts with the salesmen, put over in a nice way the fact that Christmas gifts are not looked for, expected, or wanted."

Illinois: "In our opinion, the exchange of holiday tokens is a nice practice if it is not carried too far. It is only in rare cases that some unthinking person would send gifts that might be embarrassing or offending. In my 33 years of experience there was only one occasion when this happened, and after a friendly chat with the donor, he immediately saw the light and was grateful for being advised."

Persistent Sellers

New Jersey: "It is impossible to lay down any hard and fast rules. We have written personal letters and telephoned suppliers, asking that the practice be

discontinued and explaining why. Invariably, their answer has been a cheery and friendly 'Go to Hell!' The result is that we do accept Christmas gifts of small value, acknowledging every one on company stationery so that there is a permanent record of it in our files."

Ohio: "We do not feel that it is possible or advisable to forbid acceptance of holiday remembrances in the form of advertising novelties or inexpensive gifts which are distributed as a good will token. We do consider obviously expensive gifts as not only in bad taste but an insult to the recipient."

Canada: "I think purchasing men make a mistake by refusing gifts of nominal value, as good will is just as valuable to the purchaser as to the seller, and you cannot foster good will by returning gifts sent in good faith. Excessive gifts are another matter. Our own company remembers its customers with the gift of a turkey or a box of cigars."

Few Lessons Needed

Massachusetts: "Our purchasing policy does not forbid acceptance of holiday remembrances, but each buyer is instructed to refuse gifts that might be considered as an influencing factor in the selection of a vendor. Very few occasions have arisen where a lesson in the ethics of purchasing has to be given. Our company does not make a practice of sending holiday gifts, but we spend considerable time and money in the design and making of a suitable greeting card which is sent out under the company name."

Delaware: "We do not send out letters of notice to the trade that we do not accept Christmas gifts, but we have been advising them of this fact individually for a number of years, and we believe this information has pretty well covered the trade, as the gifts we receive are nominal. We try to use judgment in this matter. So long as the cost to the sender is only a matter of a few dollars, we accept them graciously. There is no actual dollar value in drawing the line, but I would say normally the line would be drawn at $4 or $5. After all, the purchasing agent can easily return this by inviting the salesman to dinner and paying for same, which we often do. We definitely discourage liquor in any amount. In returning gifts, we try to do it as graciously as possible, as we do not wish to appear picayunish. Gifts are always embarrassing, and I believe that the average purchasing agent feels more independent and even closer to the salesman without them."

Grounds for Dismissal

New York: "Every employee of the purchasing department is forbidden to accept from any seller, for himself or his family at any time, gifts or gratuities in any form. This policy is stated in a booklet distributed to suppliers and available in reception rooms. The policy is not policed, but failure to live up to it would be grounds for disciplinary action and repeated offenses would be sufficient grounds for dismissal. The practice of holiday giving in business is declining. The abuses connected with the practice will be eliminated only when purchasing agents and management insist that the practice be discontinued."

Ohio: "Generally speaking, we leave the decision up to the individual. If he feels that there is any obligation involved, even to the slightest degree, he is expected to return the gift forthwith."

Kentucky: "We have not received any unusually expensive gifts in the purchasing department. If we did, we would have to take a definite stand. Frankly, that might be embarrassing to us. Gifts are entirely unnecessary, and I would much prefer that the practice be stopped entirely. If we had proposals before us from two suppliers, and one had given an expensive gift, it would probably place him at a disadvantage."

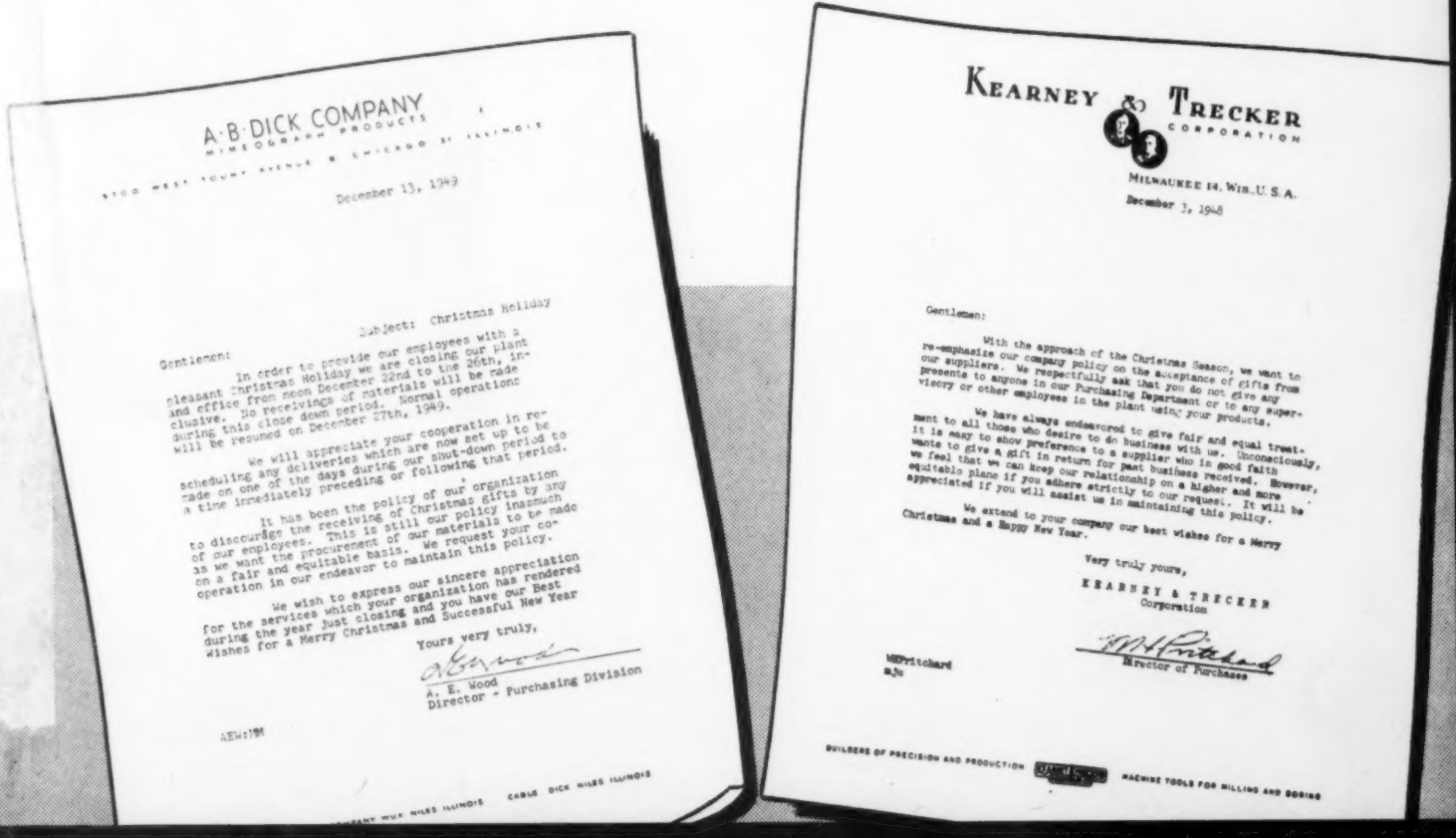
A Matter of Reputation

California: "Nothing we can say will alter a man's conscience or change his habits. With some, a pint is commercial bribery; with others, a valuable article need not be. I would not embarrass a friend if he went overboard, but I would see to it that it would not happen again. I have never been approached with what I would consider anything beyond tokens for general distribution, and I believe it is due to the reputation a purchasing man acquires over a period of years. It is common gossip among the sales fraternity if a buyer must be given gratuities to pave the way. Such a reputation may be built up unwittingly by a buyer who may not realize why he favors certain suppliers."

Indiana: "In my opinion, notices to suppliers in many cases actually result in a greater number and more costly gifts than are normally passed out. If we felt that some policy definition were necessary, I think we would have to draw the line between advertising novelties and gifts. Our sales department does distribute holiday remembrances, and

This letter combines the statement of policy with a holiday greeting from buyer to supplier.

A time-tested notice to suppliers that has eliminated 90% of the Christmas gift problem.



A·B·DICK COMPANY
MIMEOGRAPH PRODUCTS

December 13, 1949

Subject: Christmas Holiday

Gentlemen:

In order to provide our employees with a pleasant Christmas Holiday we are closing our plant and office from noon December 22nd to the 26th, inclusive. No receivings of materials will be made during this close down period. Normal operations will be resumed on December 27th, 1949.

We will appreciate your cooperation in rescheduling any deliveries which are now set up to be made on one of the days during our shut-down period to a time immediately preceding or following that period.

It has been the policy of our organization to discourage the receiving of Christmas gifts by any of our employees. This is still our policy inasmuch as we want the procurement of our materials to be made on a fair and equitable basis. We request your cooperation in our endeavor to maintain this policy.

We wish to express our sincere appreciation for the services which your organization has rendered during the year just closing and you have our Best wishes for a Merry Christmas and Successful New Year

Yours very truly,

A. E. Wood
Director - Purchasing Division

AEW:MM

KEARNEY & TRECKER CORPORATION

MILWAUKEE 14, WIS., U. S. A.

December 1, 1948

Gentlemen:

With the approach of the Christmas Season, we want to re-emphasize our company policy on the acceptance of gifts from our suppliers. We respectfully ask that you do not give any presents to anyone in our Purchasing Department or to any supervisory or other employees in the plant using your products.

We have always endeavored to give fair and equal treatment to all those who desire to do business with us. Unconsciously, it is easy to show preference to a supplier who in good faith wants to give a gift in return for past business received. However, we feel that we can keep our relationship on a higher and more equitable plane if you adhere strictly to our request. It will be appreciated if you will assist us in maintaining this policy.

We extend to your company our best wishes for a Merry Christmas and a Happy New Year.

Very truly yours,

KEARNEY & TRECKER
Corporation

W. H. Pritchard
Director of Purchases

WHPritchard
mjb

BUILDERS OF PRECISION AND PRODUCTION MACHINE TOOLS FOR MILLING AND BORING

they are not advertising mementos."

Illinois: "I was told 11 years ago that I could not accept a radio, regardless of size or price. That was all, anything else apparently being OK—perhaps an auto or a house and lot, but no radio. The fellow who accepts a case of liquor must be nuts. A quart is ample, though not good because 12 months is a long time to wait. Seriously, my acceptance of gifts is a friendly experience, and I would think twice before returning a gift, for fear of a misunderstanding. I would prefer to thank the person and request discontinuance of the practice."

Policy from Top Level

Ohio: "The president of our company has made a yearly practice of sending an advance letter to our vendors requesting that no gifts be offered to any member of our company. Our vendors are extremely cooperative and understanding. We would certainly hesitate to insult a source of supply by returning some relatively inconsequential remembrance. Our sales department has on occasion sent small gifts of an advertising nature at Christmas time, and the executive staff has for years sent an attractive colored etching to close business friends."

Missouri: "Holiday remembrances are accepted but not encouraged, and they are not acknowledged. It is embarrassing in many instances to make an issue of returning or rejecting, and our conclusion has been that the less time given to it, the better. There have been one or two suppliers whose remembrances were extremely out of line, and, regardless of embarrassment, required specific rejection. The relationship between the buyer and supplier should not be impaired by any material gift, and need not be."

Massachusetts: "If just sending out a notice would stop the sending of Christmas remembrances, we'd send the notices. Once you send a notice, you have your neck out, as there are some suppliers who insist on sending something to the people who buy from them. If they are not allowed to send it to the office, they will send it to the homes. I believe it is better to have it come to the office, where at least you can have some control over it. Our management has been satisfied with the way we are handling the matter."

Left Hand—Right Hand

New England: "I have little patience with concerns that have one policy for their sales department and an entirely different policy for their purchasing department. The sales departments of our various divisions distribute holiday remembrances that cost $15 or less. It is their belief, and I agree, that you could hardly call the receipt of such a gift the acceptance of a bribe. We like to feel that in our purchasing department we have a selected group of people of high calibre, whose salary is sufficient to expect that they would not be susceptible to commercial bribery. If you have a bunch of grafters, a good housecleaning is in order."

Canada: "The gift situation has never been a serious problem in our company. I have talked this situation over with sales managers to get their viewpoint. Their explanation is that their firm has a certain amount of money budgeted for Christmas gifts. They feel that as certain purchasing agents have done them many a service other than buying during the year, this is the way to show their appreciation. They are insistent that there is no intention on their part to embarrass the buyer."

Air Line: "This has been a subject of much discussion in our department and with our management. Our policy is to permit acceptance of gifts providing the value does not exceed $10. The companies with whom we spend the most dollars do not engage in the practice."

Indiana: "This department, as well as our sales department, sends holiday remembrances. We do not believe this helps us to obtain a pound of steel or any other commodity, and we do not give for that purpose. We give because we like to."

Don't Drive Gifting Underground

New York: "We do not issue notice to suppliers forbidding Christmas gifts, for the reason that vendors change from year to year and we feel such notices might be presumptive. Also, I believe in many cases it would just drive the practice underground—that is, gifts would be sent to homes. All in all, it is a bad thing that I would like to see eliminated entirely, but it is so deeply rooted that I never expect to live so long."

Illinois: "We have definitely discouraged this practice for many years, but rather than an outright prohibition we have indicated that the practice is objectionable to us. These gratuities have lessened very noticeably over recent years. We have been hesitant about sending out a circular as this would go to so many companies who do not, in any case, send gratuities and we have therefore preferred not to make an issue of the situation in too broad a manner. In numerous instances we have written letters to individuals asking that they refrain from sending members of our department at any holiday time, this having to do usually with those who make a practice of sending these gifts not only at Christmas but also at Thanksgiving and other festive occasions. In the numerous calls inquiring as to home address of our buyers previous to Christmas, we have picked the matter up by suggesting reluctance to give these addresses, knowing what usually is behind the inquiry."

New Jersey: "It is company policy that our purchasing personnel shall not accept gratuities from vendors. Although we do not send a notice to our suppliers,

(*Please turn to page 320*)

New Director of Industrial Controls Has Purchasing Experience

IN setting up the National Production Authority, which will have charge of priorities and allocations under the new Industrial Mobilization program, the Government is wisely following the precedent which proved so successful in the War Production Board, of selecting as Administrator an executive with intimate personal knowledge of purchasing. William Henry Harrison, appointed to this important post, served with Donald Nelson in OPM and WPB. In June, 1942, he was assigned to the Army Services of Supply, and rose to the wartime rank of Major General as Chief of the Procurement and Distribution Service, Army Signal Corps. For his outstanding accomplishments in this field, he was awarded the Distinguished Service Medal, the Most Excellent Order of the British Empire, the Cross of the French Legion of Honor, and the Hoover Medal.

In civilian life, Mr. Harrison has been identified with the telephone industry as engineer and executive. He started as a repairman for the New York Telephone Company in 1909, and became Vice President and Chief Engineer of the American Telephone and Telegraph Company in 1945. Since 1948, he has been President and Director of the International Telephone and Telegraph Corporation.



William Henry Harrison

Industry controls start on a voluntary basis

Pattern for Industrial Mobilization

PERHAPS we have been over-optimistic in referring to the past few years as the "postwar" period. Active participation in the shooting war in Korea under the United Nations banner, ominous clouds of potential conflict in other sections of the world, and a growing recognition of the need for strong natinal defense measures, combine to focus the thinking of purchasing agents on the possibility of a return to wartime controls.

Industrial and economic control powers are delegated to the President under the Defense Production Act of 1950, which became law on September 8th. A skeleton organization was immediately announced to implement these powers. Here is the outline.

National Security Resources Board

NSRB, reporting directly to the President, will serve as the planning agency to coordinate the various control functions that are delegated to the several Government agencies which will administer the defense program.

National Production Authority

NPA, organized under the Department of Commerce, is the principal agency to handle industrial controls. Its function, at the outset, is to set up a voluntary program of priorities and allocations, working out the detailed controls through industry committees representing the primary producers of basic materials.

In addition to priorities and allocations, NPA will develop and administer an inventory control program of a fairly general nature, with the expectation that both the priorities and inventory control features will be tightened as military production requires increasing quantities of steel, copper, aluminum, rubber, etc.

Economic Stabilization Agency

This newly created bureau has the complicated function of stabilizing prices and wages. The Act calls for prevention of inflation and provides that voluntary action be taken by committees representing industry, labor, Government, and the public to stabilize prices and wages.

The law permits inposition of price ceilings when price levels of a material or service rises or threatens to rise "unreasonably" above the price prevailing during the period from May 24 to June 24 (the month preceding the invasion of South Korea). Industry is required to maintain a record of prices and costs during this base period.

At the same time, the law requires that such ceilings be fair and reasonable to both buyer and seller. Of paramount significance is the principle that when a price ceiling is imposed, wages and salaries must be stabilized in those specific industries for which price ceilings are established. President Truman has indicated that he will seek a change in the law, separating price control function from a direct requirement of wage stabilization.

It is important to note that "stabilization" does not necessarily imply a freezing of either prices or wages. Neither does the setting of a base period imply a roll-back to levels of that date; it does serve to set a reference point.

Department of the Interior

Allocations and priorities powers on petroleum, gas, electric power, and solid fuels, have been delegated to the Secretary of Interior.

Department of Agriculture

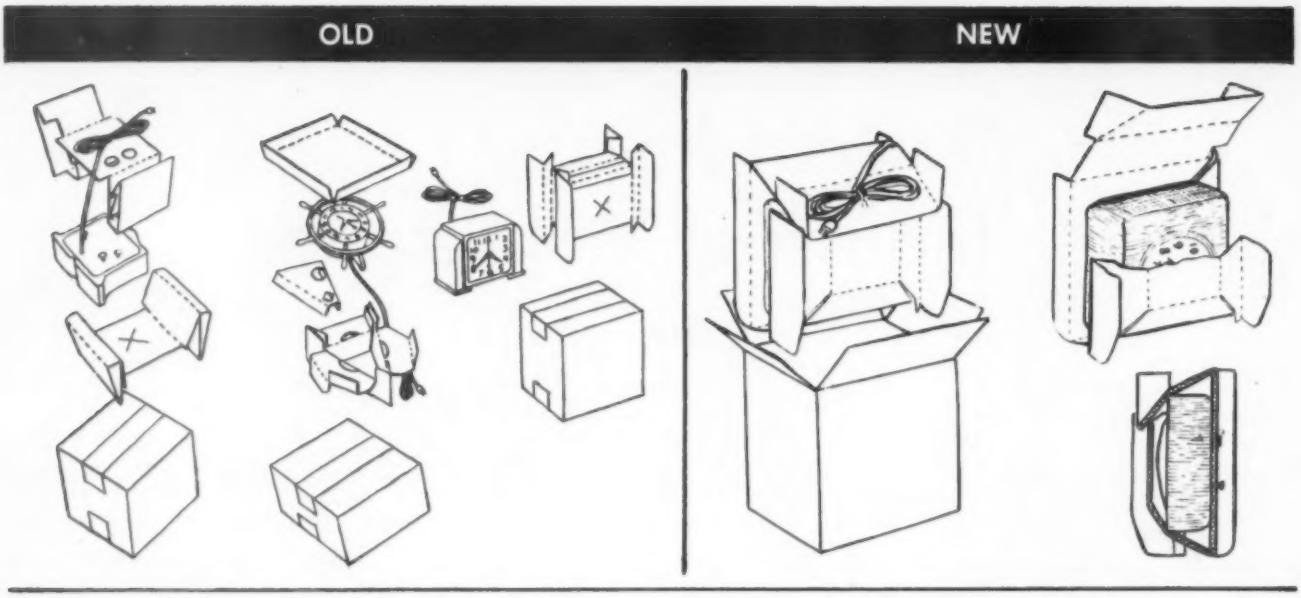
Allocations and priorities powers over agricultural production and materials and supplies required in the processing of food, have been delegated to the Secretary of Agriculture.

Government Loans and Financing

The Defense Production Act of 1950 grants the President wide powers for Government to extend loans, or to make guarantees of loans to private business, for the procurement of materials or the performance of services for the national defense, for the expansion of capacity, the development of technological processes, or the production of essential materials. In making loans or other commitments under the Act, the President can use any existing Government lending agency as he sees fit.

The procurement powers granted the President include the power to transport and store an dhave processed or refined any material procured under the Act.

The President is further authorized to install additional equipment in existing Government facilities, and to install Government-owned equipment in facilities owned by private business.



Individually designed packaging for electric clocks required an inventory of 54 different unit and master cartons, with their component parts. Development of a one-piece filler insert, adaptable to various models, has greatly simplified this problem. Now, out of a total of 58 models, 52 (representing 96% of clock production) are packaged with 3 carton sizes and 29 filler inserts. Savings in materials and packaging labor run as high as 30%; on box production labor, due to automatic mass production, 40%.

Better protection, simplified stocks, and lower cost

Purchasing Packaging by the Mile

By H. H. Slawson

THE General Electric Company annually spends $20,000,000 on packing and packaging materials which, if massed together, would fill a freight train stretching for 75 miles. This mountain of materials is used on some 200,000 products, made in 115 plants, in 88 cities and 22 states. Weight of individual products varies from less than two ounces to great machines that weigh as much as 350,000 pounds. Cost of packing ranges from a fraction of a cent to several thousand dollars for a single product.

Speaking at the American Management Association's conference on packaging at Chicago a few months ago, G. F. Simmons of GE's central purchasing division at Schenectady, N. Y., related the story of the purchasing agent's part in this tremendous packaging program. Mr. Simmons was one of five GE representatives who presented a dramatic half-day demonstration of their company's packaging policies and techniques.

The purchasing agents responsible for buying the packing material, Mr. Simmons made clear, must necessarily be specialists in their field. The $20,000,000 expended for packaging, he stated, includes $8,000,000 worth of lumber and wooden boxes, $10,000,000 of corrugated container and filler pieces, and $2,000,000 of paper products, all of which are purchased at one central location.

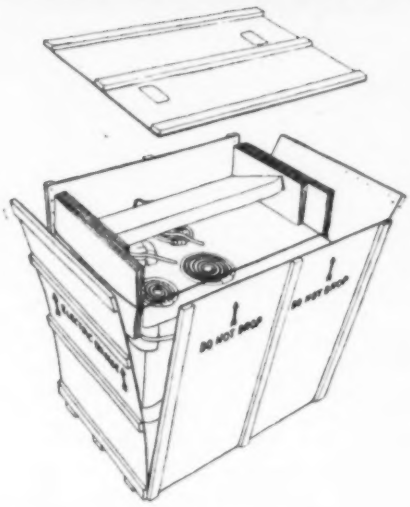
1/8-inch = $700,000

"The purchasing agent," he continued, "must know his commodities; he must visit vendors' plants and study market conditions and trends. In a sense, he must be something of a designer, offering suggestions as to substitutes and changes in specifications. His work begins on the drawing boards and ends when the final packaged product leaves the assembly line."

The purchasing agent for lumber, he related as an example, found on examining his contracts, that there was a likely possibility of using a thinner type of board than that being used. He suggested the rewriting of specifications to call for an 11/16-inch board in place of a 13/16-inch board previously used. This investigation led naturally into the possibility of substituting spruce for yellow pine. Both suggestions were eventually accepted and, in the case of spruce, made it possible to develop nearby sources of supply in the Adirondacks, New England, and Canadian areas, rather than from southern states.

"The size reduction," stated Mr. Simmons, "accounted for an estimated yearly saving of $500,000, plus the saving of weight in trans-

STANDARD CRATE FOR ELECTRIC RANGE



One standard-size container accommodates all models of electric ranges; die-cut and plain corrugated pads make up for differences in height. Savings in material and labor costs amount to 25%, with a 40% saving in storage space.

portation of incoming and outgoing materials, of $200,000 more."

For years, Mr. Simmons went on, GE had used plywood and cleated corrugated materials in the shipment of refrigerators. Then the purchasing agent of corrugated material began consideration of an all-corrugated box. With the help of the company's packaging designers and the vendors, such a box was developed. This is now being used 100%, with an estimated annual saving of $750,000.

Systematic Review for Progress

GE's purchasing contracts, Mr. Simmons explained, are usually let on a six or twelve month period—with "hand to mouth" buying in some cases, depending on market conditions. The central purchasing group is responsible for the purchasing of materials common to all factories; most of this consists of raw materials. When a contract is negotiated, notifications are sent to the various factories, advising them of the sources with whom contracts have been made, the prices, length of contract, and other pertinent information such as division of business, delivery, terms of payment, etc.

The contracts are revised every six months. When a vendor is selected, an effort is made to have the company's packaging engineer and other interested persons go over the packaged product in order to have the best method and material possible at the lowest cost.

"We are constantly working with our vendors on the packaging of incoming materials with the idea of improving the package," he said. "The buyer, the designer, and our shipping department offer suggestions as to changes or substitutes, the possibility of palletizing, or any other idea which would be of mutual advantage to buyer and seller."

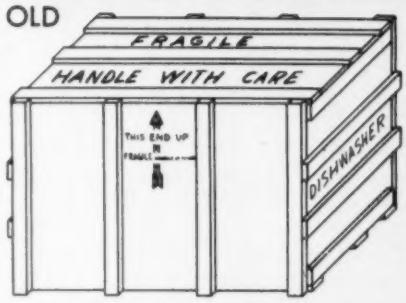
As an example, a study is under way of an item furnished by a supplier for use in the GE refrigerator. This item weighs approximately four pounds and is packed in a non-test corrugated box. It is packed on pallets, shipped by truck, and on arrival at the plant is reshipped inside the refrigerator.

"In view of the slight amount of handling," he continued, "it is there-

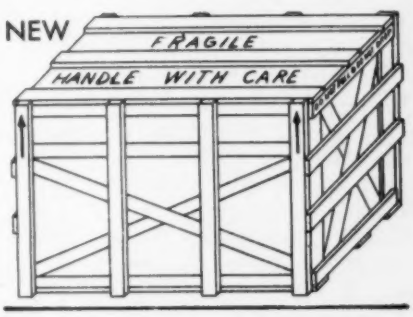
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DISHWASHER CRATE

OLD



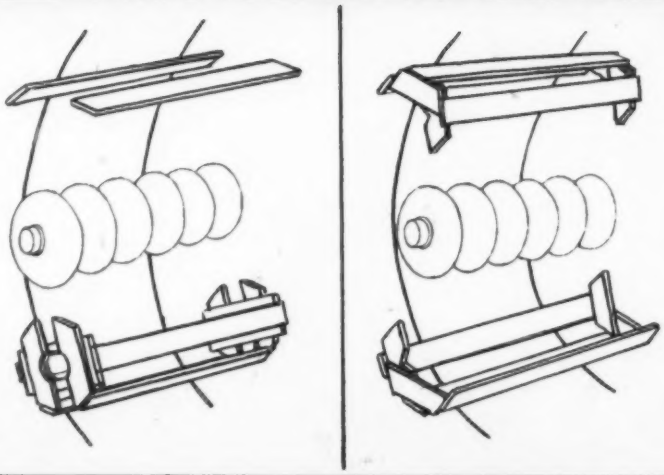
NEW



Open crate, used in place of former totally enclosed, cleated case, has actually reduced damage claims on shipments of dishwashers by a substantial amount. Laborers and materials handlers are more careful when they see that the contents are frgaile, do not rely on packaging protection and warning signs alone.

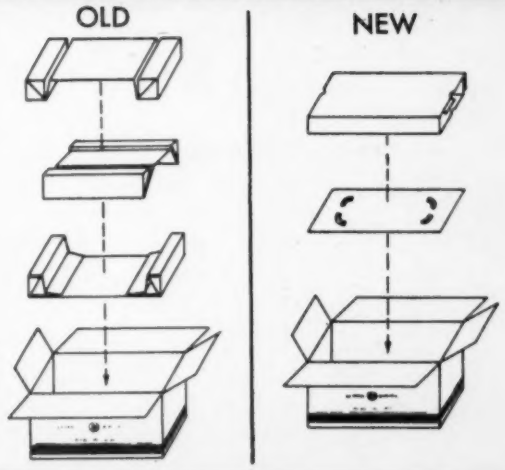
Wooden crates are required for outdoor storage of porcelain insulators. New interlocking crate design, standard for 15 different sizes, eliminates need for nailing on slats, is secured by simple wire strapping. Saving in labor cost, 32%. Right: Simplified toaster pack gives adequate protection with less material, reduced cost from 15½¢ to 9½¢, or 39%.

OLD NEW



TOASTER PACK

OLD NEW



A quick look at a new industrial science

"Static" Can be Useful, Too

By Horace B. Winslow
Purchasing Agent
Electrical Industrial Corp.
Los Angeles

ELECTROSTATIC phenomena, such as the ability of a glass rod to attract bits of paper after it is rubbed briskly with a piece of silk, have been known to mankind since the dawn of civilization. Yet, prior to the present century, the most advanced scientists were inclined to regard the entire subject of electrostatics as "practical only for the development of new theories"—a view which is reflected to this day by the small amount of space that is devoted to this subject in a majority of scientific textbooks.

However, it now seems safe to say that electrostatics is no longer "the impractical science"; for, regardless of the fact that it has not yet been dramatized as much as possible for the general public, industrial applications for electrostatic phenomena are already quite numerous and still being developed at an accelerating pace.

This is a matter of considerable importance to the industrial purchasing agent, because knowledge of electrostatics and related potentialities is becoming increasingly essential—not only to eliminate the sort of confusion that promotes unnecessary buying, but to facilitate the purchasing activities that are most likely to maintain optimum productivity at the lowest-possible cost.

Safety Through Science

For example, P. A. James Brady of National Chemical Industries was recently able to save his company an estimated $1500 monthly in the cost of personnel accidents through the purchase of inexpensive electrostatic grounding devices which are now being made by Walter G. Legge Company of New York. These grounding devices are simple shoe attachments which prevent employees from acquiring strong electrical charges due to friction in walking—the same sort of friction that gives a person a jolt when he scuffs across a carpet or slides across an automobile seat and touches a metal door handle.

Frictional charges due to walking may sound rather insignificant, but in certain types of people they may be built up to a value of several hundred volts—enough to cause a person to slip in walking across a well-polished floor, and more than enough to create a spark for the detonation of explosive chemicals.

Ions Are Everywhere

According to current scientific hypotheses, the universe comprises two essential or basic elements—space and electrical particles. When the electrical particles are in motion, we have the phenomena of energy—including light rays from the sun and the heat of a roaring blast furnace, as well as the alternating current that operates an electric motor. On the other hand, if the electrical particles are static or at rest, we have the phenomena of material substances—including the air that we breathe as well as the liquids we drink and the chemical contents of the earth.

Minute electrical particles, in theory at any rate, become the atoms and molecules of material substances as the result of electromagnetic attraction—that is, the tendency of positive particles to unite with negative particles—and, in virtually all substances, excess quantities of electrostatic particles can be detected as "surface charges" of a positive or negative nature. For instance, delicate test instruments have revealed that the upper and lower surfaces of clouds have predominant positive and negative charges while the surface of the earth as a whole has a "ground" or negative charge.

In normal circumstances, surface charges are difficult to observe; but, when two different materials such as cotton and a plastic molding are rubbed together, friction will cause one material to acquire a strong positive charge while the second material will assume an opposite charge, after which the aforementioned magnetic properties can be demonstrated.

By means of friction, it is there-



Xerographic plates are reducing the cost of industrial reproductions. This application is at the Consolidated Vultee Aircraft plant.

fore possible to generate current electricity with mechanical movements; and, conversely, it is possible to use current electricity to intensify predominant surface charges in material substances. For example, ferrous materials are inserted in solenoids or coils charged with current electricity to produce permanent magnets.

The charge that can be retained by a substance depends on the method of charging and the composition of the substance, and is usually measured in terms of the "flux" or force lines on or near the surface of the substance. Flux, in turn, explains the attraction of one material for another—such as the ability of silk-rubbed glass to pick up bits of paper, which are neither attracted nor repelled by strong permanent magnets.

Analysis By Electricity

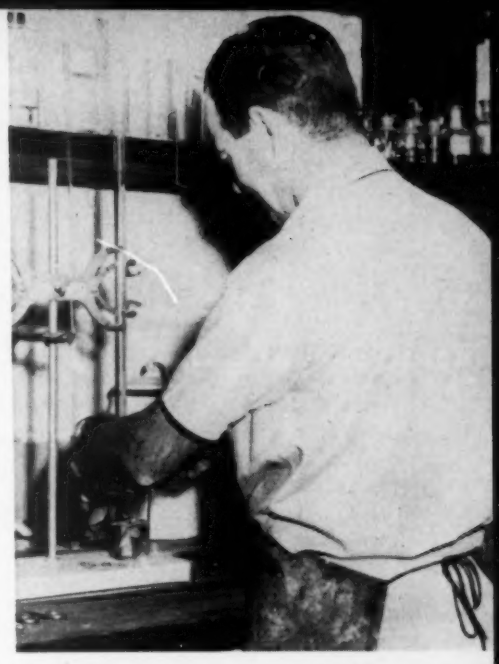
A striking example of how these phenomena are revolutionizing modern industry is a "mass spectrometer," recently developed by Consolidated Engineering Corporation at Pasadena, Calif. Purpose of this instrument is to break down a material substance, through the use of magnetic fields of varied intensities, into basic electrical particles which can be electronically counted in order to indicate the chemical composition of the substance.

In the oil industry alone, alert purchasing agents have saved their companies millions of dollars by familiarizing themselves with the mass spectrometer and its ability to perform, in a matter of minutes, chemical analyses that would normally require long hours of painstaking labor.

Quartz, galena, Rochelle-salt, and other crystalline substances are sometimes called "piezoelectric" materials because they will manifest rather intense surface charges without preliminary electrification by artificial means. However, in addition to being somewhat rare, these crystals have never been completely satisfactory for industrial usage because they are rather difficult to fabricate, easy to damage, and somewhat inconsistently electrified.

Therefore, it is believed that recently-developed methods of synthesizing piezoelectric crystals (sometimes referred to as "non-metallic magnets") should greatly improve many industrial processes and products. For instance, in the manufacture of crystal "transducers" for the generation of ultrosonic energy, Brush Development Company of Cleveland, Ohio, has achieved unprecedented results through the production and use of ceramic crystals (some of which are comparable to ferromagnetic materials in terms of electrical flux); and for the production of loudspeakers, microphones, telephone equipment, electrical measuring instruments, etc., reputable engineers currently believe that similar crystals made from plastics can be used in place of permanent magnets and electromagnets to fabricate better products at a lower cost.

The first synthetic piezoelectric crystals are believed to have been made by allowing molten waxes to solidify in a high-voltage electric field some 25 years ago; but, despite their uniform and intense electrification, these crystals (called "electrets" by their Japanese inventor) lacked the physical properties that could have enabled them to replace natural piezoelectric crystals. Followup developments were somewhat retarded by the belief that crystalline materials had to be charged as they were solidified from the liquid state, a difficult task when it is necessary to electrify materials with high molten temperatures; but now it is a rather well-known fact that dielectric substances can be polarized at room temperature, much the same as metallic substances are magnetized.



Electrostatic charges in the human body can be a serious hazard when handling explosive chemicals, unless preventive measures are employed.

One of the more interesting uses for synthetic piezoelectric crystals was recently suggested by Stanley Wagoner, purchasing agent for Arizona Food Products. It involves the use "non-metallic magnets" for the removal of foreign matter, such as dirt, from farm products—the way metallic magnets are used to extract ferrous impurities from materials now processed or employed in virtually all modern industries. The idea is, of course, to select crystals with varied flux ratings, depending on the types of impurities that must be eliminated.

Plastics Problem Solved

In the molding of thermoplastic compounds such as polystyrene with high-frequency heating equipment, manufacturers have experienced difficulties due to the unintentional electrification of the molding materials—a phenomenon which caused the moldings to attract unsightly quantities of dust, or to function unsatisfactorily as electrical insulators. However, thanks to an idea proffered by John Riley, P. A. for Mason Plastics Company, a number of West Coast fabricators have been



Engineers of the Birtcher Corp. make extensive use of magnetic test and production units in developing modern electro - medical equipment.

able to continue the use of high-speed molding equipment in connection with the less expensive thermoplastics by incorporating "anti-static" chemicals in their molding compounds.

Incidentally, the term "anti-static" is a technical misnomer which is apparently being used in the absence of a better word; for, as previously indicated, there is no such thing as a material which lacks electrostatic properties. However, there are many substances which will not acquire intense electrical charges at the short-wave heating frequencies used in molding plastics.

Dust Elimination

A number of electrostatic smoke collectors have been developed for industrial usage as the result of recent municipal campaigns to eliminate atmospheric smog, and their purpose in general is to make use of high-voltage current to provide a charging field which will cause smoke particles to be electromagnetically attracted to metallic smoke-collection units. In theory, equipment of this type—by virtue of low cost and basic simplicity—should provide an ideal answer to the smog problem; but, in actual practice, the electrostatic collectors thus far developed have been most satisfactory when used in connection with other types of smoke-reclamation equipment.

Better Coating Methods

Better results have been obtained with electrostatic charging equipment for the deposition of organic coating particles—that is, in the process known as electrostatic spraying—due to the absence of a temperature problem. Electrostatic spraying consists of utilizing fixture-mounted spray guns to eject lacquers, enamels, etc., through a sequence of fine ionizing wires (which may be charged with as many as 100,000 volts of low-amperage current) so that the coating particles will be electromagnetically charged and attracted to conveyor-grounded products. Because this conserves coating materials, simultaneously increasing production and minimizing labor requirements, purchasing agents in a variety of mass-production industries have reportedly saved as much as $100 per hour of the normal cost of finishing operations by advocating the use of electrostatic spray equipment.

A variation of the electrostatic spraying technique has been developed by Ransburg Electro-Coating Corporation to permit the use of high-voltage charging equipment for dip-coating purposes. It consists of passing dip-coated products over a high-voltage grid by means of an electrically-charged conveyor, so that electrostatic attraction will enable the grid to withdraw "teardrops" of excess coating materials from the bottom surfaces of the products. This has yielded greater returns than the electrostatic spraying process in some instances because it has increased the number of practical applications for the dip-coating technique, which necessitates the use of relatively inexpensive equipment.

Xerography—A New Process

Curiously enough, the materials that readily conduct current electricity will not usually retain as much of an electrostatic charge as titanate ceramics and other strong "dielectrics" after they have been exposed to a saturating electrical current or an electromagnetic field. For example, soft grades of iron cannot be magnetized or electrified as intensely as polystyrene plastics.

However, it is a rather noteworthy fact that the electrification of many materials is dependent on circumstances as well as material properties. For instance, metals and nonmetals such as selenium and sulphur will retain strong electrostatic charges in absolute darkness but not in sunlight or brightly-lighted rooms.

The latter phenomena are significant as well as interesting; for, in addition to having permitted revolutionary new developments in the field of xerography, they are responsible for such well-known products as selenium rectifiers and the photo-electric cell.

"Xerography", incidentally, is a generic term which has been coined to designate a group of electrostatic processing methods which are of particular importance to the printing trades and in a growing number of industrial activities which involve the use of photographic or photostatic reproductions. The commercial development of these processes was instituted by Haloid Company at Rochester, N. Y., and is now continuing at such a pace that many enthusiasts believe that xerography will eventually become the predominant force in virtually all reproduction fields.

A typical xerographic process, which has been used to duplicate industrial diagrams, consists of electrostatically sensitizing a selenium-coated plate in a high-voltage electric field, exposing the plate with a camera or by contact printing methods so that its electrostatic charge will be dissipated by light to varied degrees in different areas, and developing the exposed image on the plate with colored powders—electrostatic nature of which permits the powders to create a visible image in accordance with their affinity for the electrostatic charges remaining on the plate. Developed images on selenium-coated plates can be transferred by heat and adhesion to non-sensitive materials, such as paper sheets, so that the plates can be recharged and reused indefinitely—thus creating extremely durable and accurate reproductions without requiring repeated expenditures for sensitized films and papers with varied reproduction qualities.



Ceramics? Yes, but they have the properties of permanent magnets, too, as produced by the Brush Development Co., Cleveland.

Industry's prime problem in adjusting its methods to "The Distribution Age"

Reducing Costs of Distribution

By Paul V. Farrell

KEY to the continued success—or ultimate failure—of our great industrial machine may be found in what we do in the next few years about reducing distribution costs.

This is the opinion increasingly voiced by industry leaders and cost analysts who see in scientific distribution the next logical and necessary step forward from the present high degree of production efficiency. We must, they say, find better and cheaper ways to sell and find new markets for the tremendous amount of things that technological progress has enabled us to manufacture.

Recently PURCHASING conducted a survey among a cross-section of purchasing agents in all parts of the country to obtain first hand observations and opinions on what advances are being made in reducing marketing costs, and what opportunities exist for further improvement. Purchasing men, in a sensitive spot in the distribution system, have a practical knowledge of the hows and whys of getting goods where they are needed, as rapidly and cheaply as possible. The large number of replies and the unusual amount of comment produced by the survey reveal an intense and constructive interest in cutting the costs of distribution and bringing its efficiency to a par with that reached in the production phase.

Numerically, the purchasing agents looked at present distribution problems, and the outlook for improvement, this way: more than two out of three (68%) have noted a definite effort on the part of suppliers to increase the efficiency of distribution. Slightly more than half (54%) report that they are being solicited to a significant extent by suppliers operating beyond their natural or economical marketing areas. A large majority (81%) say that suppliers in their areas are improving warehouse facilities for more efficient distribution.

Scientific planning to provide a more even flow of materials, in place of seasonal peaks or alternating periods of shortage and surplus, was recognized as a primary need by 90% of the purchasing men. A comparable number (89%) feel that there is room for cost-saving improvements and simplification of packaging, without hazard to the products. Only 43% report that suppliers have sought their cooperation toward eliminating or reducing the small order problem, a persistent source of annoyance and expense to both buyer and seller. Three out of five (60%) say that government regulations on trade seriously increase distribution costs.

Room for Improvement in Sales Methods

Naturally enough, buyers' comments were numerous and pointed on that sensitive area of the distribution system closest to their daily experience — salesmen and salesmanship.

"Salesmen are eager and willing, but not too well schooled in knowledge of products, particularly the application of products to the business of the customer," said one P.A. "Often there is something new, or something old and forgotten, that could help a customer in difficulty. We look to the salesman for such help, but too often he does not know."

A similar point is made in another comment: "Distribution costs can be reduced by having well qualified sales engineers—qualified to make on-the-spot decisions, not only with the thought of obtaining an order, but also rendering service and satisfaction."

Another observation was that selling costs are inflated by "the carry-over of wartime habits—expensive entertaining, high priced hotel and other accommodations—and by poor coverage of territory by salesmen, jumping here and there instead of saturation of one area. . . We find salesmen operating from bases 600 miles away, who come in twice in one month, then don't show for six weeks to two months."

Excessive sales calls and duplicated effort came in for criticism in many of the replies. Some random comments: "Too many salesmen repeating calls when there is no application for their material. . . Have had several companies contact me through two or more salesmen. . . Effort should be made to cut down on the number of calls a salesman makes on one concern, thus increasing the number of customers he could handle. . . Many salesmen, otherwise cooperative, fail to heed my suggestions for less frequent calls; I know that I pay in the cost of materials for this waste of salesmen's time."

Distributor Policies vs. Direct Sales

Distribution through local representatives and strategically located warehouse stocks is generally commended, with the qualification that this entails a responsibility for maintaining adequate stocks and service, and the observation that several abuses exist in the system. Among the statements on this point are the following:

"There are about fifteen distributors all trying to sell us the same product. This is economically unsound; so is the resultant tendency toward price cutting."

"Manufacturers should have their distributors handle *all* transactions in their area other than technical

advice. Manufacturers are prone to ask that sizable contracts be negotiated 'direct'. If this were eliminated, the distributor would be more apt to take interest and work out mutual savings."

"In several instances where I have been advised by manufacturers that such-and-such company is their authorized distributor in this area, it develops that either the supplier is not furnishing sufficient stock to the distributor, or the distributor is not carrying enough stock to meet the demand, or better discounts can be secured on direct orders."

Intermediaries Often Delay Receipt of Material

"Commissions to manufacturers' representatives are unjustified when the representative plays no part in selling or servicing the account. I know of instances where a mark-up of 23% is granted to a so-called jobber who stocked nothing—simply mailed in the orders. In fact, the mark-up applied even when the orders went direct to the factory."

"Entirely too many middlemen are deriving unjustifiable profits by acting as intermediaries, often delaying instead of expediting receipt of material, and at the same time adding a considerable cost to the item in question."

"Many manufacturers are setting up their own warehouse facilities and eliminating local jobbers and supply houses. However, they seem reluctant to pass the apparent savings on to the customer."

Regional Hardships Due to Freight Costs

High freight rates and governmental regulations were blamed by several purchasing agents for some of the maladjustments in the distribution system. Disparities in cost, and the tremendous opportunity for improvement, are dramatically expressed by a distribution engineer for a large petroleum company. "We can move a gallon of oil, weighing about 7 pounds, from Texas to Boston cheaper than we can mail a post card the same distance—because of scientific distribution," he says.

The purchasing executive for a New York State manufacturer states that the Public Service Commission and ICC rules have created a situation where he can buy steel from a supplier 300 miles away, operating his own truck delivery, more economically than he can buy the same material from a supplier only 20 miles away, who depends on a licensed carrier.

Offered as a similar example by another P.A. was a recent ICC authorization to the express company permitting twice the first class rate on bars, pipe and tubing above 16 feet.

"The 3% tax on transportation should be wiped out," says another New York buyer. "Return of the old basing point pricing on steel would lessen our cost appreciably in this locality."

"Exorbitant freight rates are making it increasingly difficult to lower costs on the West Coast," one answer read. "Carriers are cutting their own revenue by forcing customers here to obtain goods locally. Eastern suppliers would do well to improve distribution facilities to their West Coast customers—their greatest potential market."

Similar sentiment, combined with news that the situation is improving, comes from another expanding section. "The construction industry in the South," says this P.A., "is definitely hampered by high freight rates. Quite a large number of manufacturers and distributors call on us with a view of securing warehouse facilities in the South, to put them closer to an economical marketing area. Many present warehouses in this territory are being revamped and modernized to more efficiently handle and distribute various products."

Solicitation of business beyond a supplier's natural area, cited in several of the replies, not only adds transportation cost but also lengthens delivery time. "These people waste our time and their own," says a New Jersey buyer. "The policy must necessarily raise costs to the people that do business with them."

A governmental buyer suggests that every effort be made to place contracts with suppliers within the geographical area where supplies are to be used, thus easing distribution burdens and costs.

Simplified Packaging for More Economical Distribution

Progress in simplification and standardization was widely noted as contributing to better distribution, with general agreement that there is still considerable room for improvement. Package standardization by pole line hardware manufacturers was singled out by several respondents as an outstanding example, reducing cost of handling, making more efficient use of storeroom space, and cutting down on safety hazards by limiting the weight of individual packages.

At the same time, a number of replies point out that poor packaging—regardless of simplicity—is also a danger, involving the possibility of damage to products. The vice president of a large midwestern manufacturing company remarks, "There is no question but that some things are overpackaged. We ourselves have made a serious study of this problem over a long period. Generally speaking, however, we would prefer to see goods overpackaged rather than underpackaged. Our complaints to vendors arise more from damage of underpackaging."

Economical Distribution Is a Mutual Problem

The small order problem is one of the persistent obstacles to lowering the cost of distribution. It has received a lot of attention on the part of buyers and sellers alike. High unit prices quoted on small quantities, and assessment of minimum orders charges or service charges to discourage small orders, are described as methods used by some sellers. On the buyer's side, the following comment is of interest:

"Better warehousing facilities *by the purchaser* to take advantage of quantity prices and reduced paper work when one large order will take the place of numerous small orders, is No. 1 on the distribution cost reduction program. Numerous advances have been made by sellers to cut costs by increased quantity packaging."

Customer and Supplier Share Responsibility

The need for united effort in meeting this and other distribution problems is widely stressed. The P.A. for a large implement manufacturer writes: "The elimination of peaks and valleys, alternating surplus and shortages, is a joint responsibility of customer and supplier. Where production facilities are not great enough to meet peak demand, it is the supplier's job to advise the customer, and it is to the customer's advantage to secure equitable deliveries during the time when capacity is available."

Another respondent sums it up this way: "Scientific distribution is deserving of the same top level consideration as sales, production, scheduling, purchasing, and materials control. Good purchasing requires a working knowledge of and concern for all these functions of industry as they affect purchasing."

Pages 91-94 Missing

for entering quotations, coded with the number of the vendor as shown in the heading.

When the order is placed, the purchase history is typed on the back of the card. When prices change, a record of these is typed in a "Change Order" field on the back of the card. The bottom of the card is notched to fit over rods in the file drawers and to hold it upright in proper position.

When Packard installed this system about three years ago, a set of history cards was made up by transcribing data from purchase requisitions dating back to 1941. It now has eight single-pedestal files of them, totaling about 69,000 cards. Each unit contains three drawers, and each drawer is divided into three main sections and eight subsections, with four rows to the subsection, making a total capacity of 8,640 cards in each filing unit.

The purchase order is letter size, and consists of six copies. The original goes to the vendor; copies are distributed to Accounting, Purchasing, Cost Control, Follow-Up, and Receiving. Purchase requisitions are numbered serially, and these numbers become the purchase order numbers, which are typed in as the order is written. The buyer's name is typed, and the signature of the Director of Purchases is printed, on the purchase order.

The purchase order change notice is a conventional type form.

Follow-Up Section

The follow-up group numbers 19 procurement men and 10 clerical assistants. It is located in the Production Control Department. As it is customary for purchase order clerks in Production Control to analyze parts requirements and write purchase requisitions, it is considered logical at Packard to have the same men issue the releases and to follow-up after purchase orders have been issued by the Purchasing Department.

Packard has tried the plan of having a separate group of follow-up men in the Purchasing Department. However, the present arrangement has proved to be the most satisfactory. Buyers are relieved of considerable responsibility and an immense amount of detail, thus leaving them free to concentrate on negotiation and the selection of best sources. Production Control is relieved of speculation and anxiety about the status of orders, and of consequent telephone calls to Purchasing to make inquiries about them. It knows at all times just what the parts requirements are and it issues the shipping schedules and releases accordingly. If parts fail to arrive on time, it goes direct to the suppliers instead of taking the round-about route through the Purchasing Department.

Each procurement man in the follow-up section has a "deck of cards"—ordering and receiving records covering a specified group of material items. These cards are 10 x 11¼ inches in size, ruled on both sides, and kept in book-type files on portable stands. Days of the month are printed across the top margin, and are tabbed for follow-up. These procurement men thus know how large a bank of each part should be on hand. Whenever such a bank gets down to a 4-days stock, it goes on the critical list. As an additional check and safeguard, in case there should be some unknown shrinkage which might otherwise be overlooked, the materials men in the shop turn in a list of any items of which they have less than a 4-days supply.

One clerical assistant for each two procurement men makes the necessary bookkeeping entries for them in their card files.

When materials are received, notice is put on a Teletype network to all departments concerned, including procurement. Clerks in the latter group post this information to the record cards. When parts are placed on the critical shortage list, the Receiving Department is notified to report receipt of them immediately when they arrive. When they do arrive, even before they are checked and inspected, Receiving transmits this information by Telautograph to a station located right at the desk of the supervisor of the follow-up group.

Invoices go direct to the Accounting Department. They are sent to Production Control to be checked with receiving slips. If they are correct, invoices are stamped and returned to Accounting for payment. If they are incorrect, the discrepancy is spotted by Accounting and is corrected. If parts are damaged or not up to specifications, the Purchasing Department is notified, and negotiates with the vendor for replacement.

The Purchasing Department works closely with the Materials Handling Department, and arranges with suppliers to have their products shipped in such form as to be most convenient and economical to unload and handle at the Packard plant.

As the procurement men in Production Control are in day-to-day touch with parts requirements, and have rather a close relationship with suppliers, they acquire experience that helps to qualify them to become buyers. Hence it is the general policy of the Purchasing Department to recruit new buyers from this group.

The purchase record is kept in a visible file, with approximately 69,000 cards providing a complete history of purchase transactions, item by item.



Clerical section of the Purchasing Division, located directly across a corridor from the buyers' offices.



To make your expediting more effective

put yourself in the vendor's place

EXPEDITING As the Expeditee Sees It

By Julian G. Davies

THE spilling of the Red Tide across the 38th Parallel has produced many uncertainties, but one thing we may assuredly look for is the return of the Expediter in all his glory. Hostilities produce a business climate in which the expediter propagates and flourishes like the green bay tree. The impact of stepped-up military preparations on an already overburdened national production machine will provide the makings of another field day for him. Purchasing agents, particularly those having important requirements of metals, wood products, textiles, rubber, leather, and many other commodities essential to a military preparedness program will quickly sense the perplexing situation that is now developing, and must plan accordingly.

Much has been written regarding expediting methods, but practically all of it has come from the buyer's side. Just as the salesman must sell himself to the buyer, so the expediter must favorably impress the scheduling officers whose response spells success or failure for his efforts. The views of a representative cross-section of such officers in critical industries may serve to indicate those methods likely to produce the most benefit to the buyer and his company, and to show those which should be avoided if the efforts of the expediter are to achieve a full measure of effectiveness.

Scheduling — A Mutual Need

None of these vendor officials object to routine follow-up of orders by their customers. All suppliers realize that with modern systems control it is essential that the customer be fully informed regarding delivery dates. Most suppliers go to considerable lengths to inform customers promptly of unavoidable revisions of delivery promises. Even as you and I, the supplier also has difficulties in obtaining *his* raw materials, with problems of mechanical failures, recalcitrant labor, and many others. The vendor expects, and usually deals promptly with an inquiry received a week or ten days prior to the promised delivery, seeking assurance that the delivery date will be maintained.

Additional Work Is Involved

Some discretion should, however, be exercised by the customer in his follow-up activities. He must realize that extra work is involved—work which might be applied to better advantage if some of the following-up is unnecessary. Where the vendor has established a record of reasonable adherence to original delivery promises, or of prompt notification to the customer of unavoidable delays, follow-up work should be reduced to a minimum, and kept there.

Where experience has shown that a vendor's promises are habitually unreliable, the buyer may well be criticized for not changing his supplier, unless that condition applies throughout a particular industry, as it sometimes does. Certainly, the frequent failure to obtain deliveries on specified time does not enhance the reputation of the buyer in the estimation of his company associates. It can also add greatly to the work of himself and his staff.

It is in the field of "expediting," as distinct from "follow-up," that most vendor criticism arises. Most scheduling departments recognize that the expediter is in a tough spot. He must show results, or make way for someone who will. The purchasing agent to whom the expediter reports is in much the same position. Top officials of his company are breathing down his neck. With the prospect of work stoppages unless materials and components are made available on schedule, the pressure is tremendous, and is frequently passed along to the vendor in terms that too often are lacking in tact.

Scheduling people suggest that if the customer's purchasing agent and expediter would try to place themselves in the vendor's position, their entreaties might produce better results. Scheduling departments are developed and staffed to handle the recognized duties of the department, which keep them fully employed, particularly in times of stress. If their activities are hampered by catering to the needs of a constant procession of callers seeking delivery information, their efficiency is bound to suffer, and so are the interests of their customers.

Priority in Production

Schedulers—particularly for mills producing such commodities as lumber, or rolled bars, strips, plates, sheets, and similar metal products—point out that the time to emphasize the urgent need for material on a specific order is when that order is *first placed,* not after it has been placed on a mill schedule that must be closely adhered to.

Those making up a production schedule are often confronted with priority instructions from governmental agencies, and by the special requirements of many other customers, each of whom considers his own need as of first importance. Every effort is made to place the individual items in positions on the schedule that will most nearly meet needs of the customer and the requirements and capacity of the mill. The schedule, consisting of many scores of such items, is then put into production and raw materials

are lined up in proper order to produce them as they are listed.

It is apparent that many among customers' personnel have an inadequate conception of the extra work and loss of valuable time involved in changing the position of a single item in the production schedule, the issuing and distribution of "change" forms, the extra handling of raw materials, and the additional work thereby piled on the shoulders of mill people whose responsibilities in times like these are sufficient to extend them to the utmost without these added complications.

In pressing for special treatment, many customers overlook the fact that a chief responsibility of mill management is to produce at a profit. The production manager cannot possibly produce profitably if his schedule is frequently disrupted. Scheduling officers understand this, and have a decided aversion to ordering a change in the schedules which they have carefully drawn up and presented to mill management, definitely specifying the order in which various items are to be produced. Such changes could soon reduce production activities to absolute chaos.

Comparable to the confusion caused by changes in schedule position is that occasioned by alterations in size, grade, analysis, and other qualities, after the schedule has been turned over to the mill. In isolated instances, such changes cannot be avoided, but it would seem that lack of planning and of proper care in deciding and setting up the specifications are the chief reasons behind these hindrances to efficient production.

Another feature that the expediter is prone to overlook, but which is constantly uppermost in the minds of the vendor's scheduling officers is that each time a change is made, and an order taken out of its place and moved up on the schedule, a host of orders for other customers will be delayed.

The very fact that these other customers may have exercised forbearance and have not hounded the vendor for special consideration is bound to influence the hard-pressed schedulers against taking any action detrimental to their interests. Knowing from past experience that criticism and demands for explanation will result from delay to each item, thus compounding their problems, can it be wondered at that changes in mill schedules are looked upon with the proverbial jaundiced eye?

Evidence is not wanting that much expediting results from the acceptance by customers' sales departments of orders requiring delivery dates which anyone familiar with conditions should know are unreasonable. Such orders are accepted to keep them from competitors who also would be willing to promise impossible delivery dates.

The sales conscience is solved by a resolution to get the purchasing agent to "put the pressure on." The purchasing agent has no alternative but to get in there pitching, and tells his expediter in turn to take up the cudgels in the hope of extricating the sales department from the mess it walked into with its eyes wide open.



The Green Light

Many delivery jams are the result of needlessly deferring definite action on quotations from prospective suppliers. Where construction or other engineering work is involved, this condition is particularly prevalent. Hesitancy about giving the "Go Ahead" signal wastes valuable time for the supplier. Too often the customer works dangerously close to a deadline when orders could and should have been placed days, weeks, or even months earlier. When it is finally given to the supplier, it is usually accompanied by the well known pressure technique, all of which could have been avoided if the order had been placed more promptly.

The good will that an expediter is able to engender in the minds of the vendor's officials is his chief—usually, his *only*—stock in trade. Those with whom he deals are human beings who, while they may be hesitant about expressing their frank opinions of his methods, do plenty of thinking. His effectiveness will usually stack up in inverse ratio to the degree to which he continually makes a nuisance of himself.

Those back of him in his own organization, top management and purchasing department, should realize this. Many of his difficulties can be eradicated before they start.

(a) by careful planning and prompt action in his own company;

(b) by a knowledge of vendors' production problems;

(c) by the application of the Golden Rule (of which we don't seem to hear much these days); and

(b) by a knowledge of vendors' common sense in business contacts.

Plan factory and office space from the floor up

Proper Flooring is a Wise Investment

By Willliam Mueller

YOUR floors are costing you too much if they are expensive to maintain, are unsafe, are noisy, reflect glare, slow down production or materials handling, or damage products through seepage of moisture or alkali. Floors selected with "end use" in mind, and properly maintained, will eliminate these disadvantages and will help to keep your plant or office at peak efficiency while saving you money on your original flooring investment.

When planning to install floors in factory work areas, offices, executives' rooms and reception rooms, it is economical to choose the type of flooring best suited to your needs.

Most architects and building professionals agree that in floor installations it never pays to cut corners. This does not imply that the most expensive flooring is the wisest choice. There are times when the least expensive flooring may be the most practical.



Asphalt tile floor at the new General Electric Turbine Plant, Schenectady.

Factory Areas

Concrete ranks high among general-purpose floorings for many factory work areas because it is durable, fireproof, and stands up well under rough use. However, it originates considerable dust, and since it has no resilience, it is hard to walk or stand on and produces extreme fatigue. The fatigue factor can be minimized by installing resilient flooring on the concrete in front of machines and other places where workers must stand or walk, leaving the bare concrete exposed in areas where heavy loads must be moved.

For unusually heavy factory trucking, steel grids set in concrete prevent floor crackup. When the steel grids are inserted in small squares they lower repair costs, because only the affected area has to be lifted out and replaced.

Washing new concrete floors with a 10% solution of muriatic acid will remove dirt and any bloom which has come as the water evaporates from the floor. The floor should be treated with a liquid hardener or with a sealer to prevent "dusting." On an untreated concrete floor a fine concrete dust is apt to rise. In service areas, broom sweeping and an occasional scrubbing with warm water and a neutral soap are all the cleaning necessary.

Wood block flooring is often laid on concrete to provide resilience. Because wood tends to absorb grease and become slippery in time, and because the block is laid with the grain perpendicular, the surface is rough and hence difficult to clean. If heavy traffic must be considered, a resilient asphalt or rubber tile flooring can be used on the wood block everywhere except in traffic lanes. In addition to providing greater comfort for workers, this treatment will help to brighten up the interior. This display of brightness and color to improve worker morale cannot be achieved with a vast expanse of wood block alone.

Wood block floors, however, are about double the cost of top-grade concrete, and also double maintenance time and costs. These wood block floors require an oily sealer coat immediately after they are laid and are then polished mechanically with a rotary brush. Daily sweeping and weekly repolishing are required, but they are never scrubbed with water.



The decorative possibilities of asphalt tile are endless. It is quiet, resilient, and easy to maintain.

In factory offices and company cafeterias, the cheerful colors of asphalt or rubber tile flooring offer a bright contrast to the usually drab factory surroundings. Asphalt tile flooring helps to achieve a modern effect and at the same time is one of the most durable of all resilient floors. The greaseproof type is particularly suited to cafeterias because it is impervious to bits of greasy food particles dropped on the floor.

Other Plant Areas

This flooring is installed tile-by-tile, permitting the creation of a wide variety of original designs in many colors. Islands of tile forming an attracitve pattern around the tables and counters in a cafeteria can be made with inserts of colorful ribbon-like strips of the material. Numerals and letters can be used to insert the firm's name or slogan for added individuality.

Traffic directions can be indicated on factory or office floor work areas with feature strip, cut-out arrows, or picture-tiles. These may be used to indicate the location of a storeroom, stairway, elevator, rest room and other key points.

As this is the only type of resilient flooring that can be laid successfully on concrete which is in direct contact with the earth, it is used heavily for flooring basement areas and for basement stockrooms.

The Southern Bell Telephone Company, Charlotte, N. C., in its search for special flooring to meet the rigid requirements of a generating room, selected an asphalt tile floor covering, because of its acid-resistant property. The new General Electric Turbine Plant at Schenectady, New York, also chose 90,000 square feet of this flooring as the most practical for its purposes.

General Office Areas

In offices, asphalt tile is a natural choice for an all-purpose flooring because it is quiet and comfortable underfoot. It is economical because the original cost is low; it is easily and quickly installed and can be walked on immediately after installation; is extremely durable; colors can't walk off, because they go all the way through to the bottom; and repairs are easily made because affected areas can be replaced tile-by-tile.

Muddy footprints and tracked-in dirt constitute no problem in the office with flooring of this material, because dirt won't stick to its smooth surface. Moisture and soil can be wiped up with a damp mop. Routine sweeping and an occasional washing and waxing are all the care required to maintain its freshness. In fact, its cost per year of service is lower than that of any other resilient flooring.

For client and employee safety, it is practical for the floor buyer to know that anti-slip coefficient tests by the National Bureau of Standards show asphalt tile has generally the highest anti-slip coefficient of any type of resilient flooring. This material is composed largely of asbestos, which helps to make it combustion-resistant, another added safety feature.

Private Office and Reception Room

For distinctive executive offices, reception rooms and other areas where a luxurious atmosphere is desired, cork tile flooring is frequently specified by architects and designers. It comes in random shades, ranging from light oak to dark walnut. These natural variations of shading make it possible to get many decorative effects.

Super-Elasticity, Fire-Resistance

An outstanding advantage of cork tile is its elasticity, providing quiet, resilience and restfulness underfoot. The Eaton Research Laboratory at Cleveland selected a cork tile for its general office areas, because of its super-elasticity and quietness underfoot. Half of its substance is air, which makes it an excellent insulator, giving protection from heat and cold. It is not slippery, because cork grips any surface that is pressed against it; therefore, wet or dry, it is safe. Cork also sheds moisture

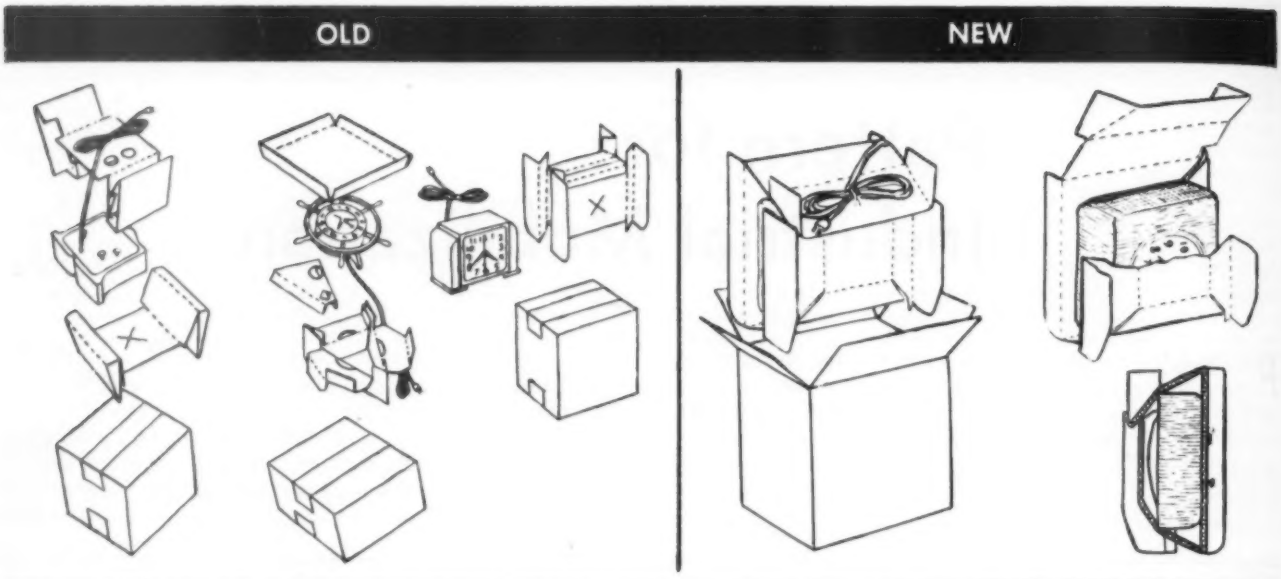
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Concrete floors are basic for heavy industrial uses. They can be treated to secure desired structural and surface properties



Wood flooring is serviceable and economical in first cost, but is vulnerable to grease and factory dirt.





Individually designed packaging for electric clocks required an inventory of 54 different unit and master cartons, with their component parts. Development of a one-piece filler insert, adaptable to various models, has greatly simplified this problem. Now, out of a total of 58 models, 52 (representing 96% of clock production) are packaged with 3 carton sizes and 29 filler inserts. Savings in materials and packaging labor run as high as 30%; on box production labor, due to automatic mass production, 40%.

Better protection, simplified stocks, and lower cost

Purchasing Packaging by the Mile

By H. H. Slawson

THE General Electric Company annually spends $20,000,000 on packing and packaging materials which, if massed together, would fill a freight train stretching for 75 miles. This mountain of materials is used on some 200,000 products, made in 115 plants, in 88 cities and 22 states. Weight of individual products varies from less than two ounces to great machines that weigh as much as 350,000 pounds. Cost of packing ranges from a fraction of a cent to several thousand dollars for a single product.

Speaking at the American Management Association's conference on packaging at Chicago a few months ago, G. F. Simmons of GE's central purchasing division at Schenectady, N. Y., related the story of the purchasing agent's part in this tremendous packaging program. Mr. Simmons was one of five GE representatives who presented a dramatic half-day demonstration of their company's packaging policies and techniques.

The purchasing agents responsible for buying the packing material, Mr. Simmons made clear, must necessarily be specialists in their field. The $20,000,000 expended for packaging, he stated, includes $8,000,000 worth of lumber and wooden boxes, $10,000,000 of corrugated container and filler pieces, and $2,000,000 of paper products, all of which are purchased at one central location.

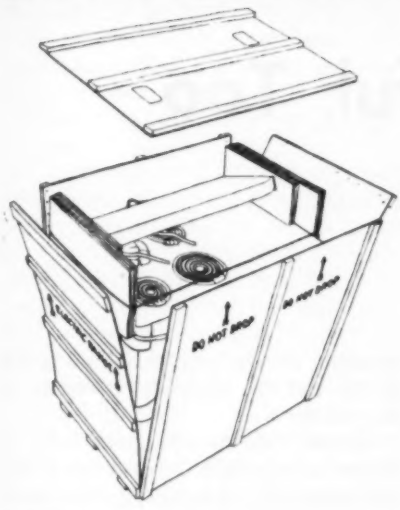
1/8-inch = $700,000

"The purchasing agent," he continued, "must know his commodities; he must visit vendors' plants and study market conditions and trends. In a sense, he must be something of a designer, offering suggestions as to substitutes and changes in specifications. His work begins on the drawing boards and ends when the final packaged product leaves the assembly line."

The purchasing agent for lumber, he related as an example, found on examining his contracts, that there was a likely possibility of using a thinner type of board than that being used. He suggested the rewriting of specifications to call for an 11/16-inch board in place of a 13/16-inch board previously used. This investigation led naturally into the possibility of substituting spruce for yellow pine. Both suggestions were eventually accepted and, in the case of spruce, made it possible to develop nearby sources of supply in the Adirondacks, New England, and Canadian areas, rather than from southern states.

"The size reduction," stated Mr. Simmons, "accounted for an estimated yearly saving of $500,000, plus the saving of weight in trans-

STANDARD CRATE FOR ELECTRIC RANGE



One standard-size container accommodates all models of electric ranges; die-cut and plain corrugated pads make up for differences in height. Savings in material and labor costs amount to 25%, with a 40% saving in storage space.

portation of incoming and outgoing materials, of $200,000 more."

For years, Mr. Simmons went on, GE had used plywood and cleated corrugated materials in the shipment of refrigerators. Then the purchasing agent of corrugated material began consideration of an all-corrugated box. With the help of the company's packaging designers and the vendors, such a box was developed. This is now being used 100%, with an estimated annual saving of $750,000.

Systematic Review for Progress

GE's purchasing contracts, Mr. Simmons explained, are usually let on a six or twelve month period—with "hand to mouth" buying in some cases, depending on market conditions. The central purchasing group is responsible for the purchasing of materials common to all factories; most of this consists of raw materials. When a contract is negotiated, notifications are sent to the various factories, advising them of the sources with whom contracts have been made, the prices, length of contract, and other pertinent information such as division of business, delivery, terms of payment, etc.

The contracts are revised every six months. When a vendor is selected, an effort is made to have the company's packaging engineer and other interested persons go over the packaged product in order to have the best method and material possible at the lowest cost.

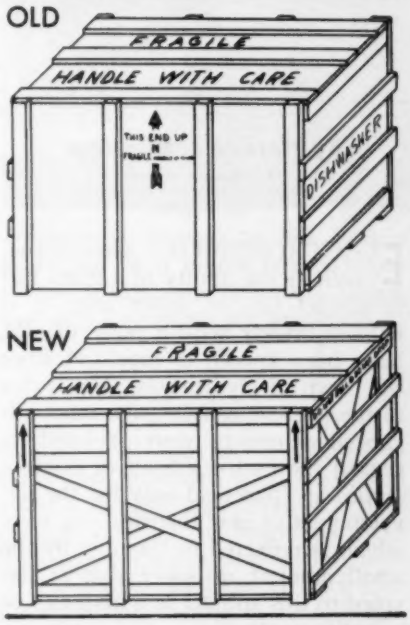
"We are constantly working with our vendors on the packaging of incoming materials with the idea of improving the package," he said. "The buyer, the designer, and our shipping department offer suggestions as to changes or substitutes, the possibility of palletizing, or any other idea which would be of mutual advantage to buyer and seller."

As an example, a study is under way of an item furnished by a supplier for use in the GE refrigerator. This item weighs approximately four pounds and is packed in a non-test corrugated box. It is packed on pallets, shipped by truck, and on arrival at the plant is reshipped inside the refrigerator.

"In view of the slight amount of handling," he continued, "it is there-

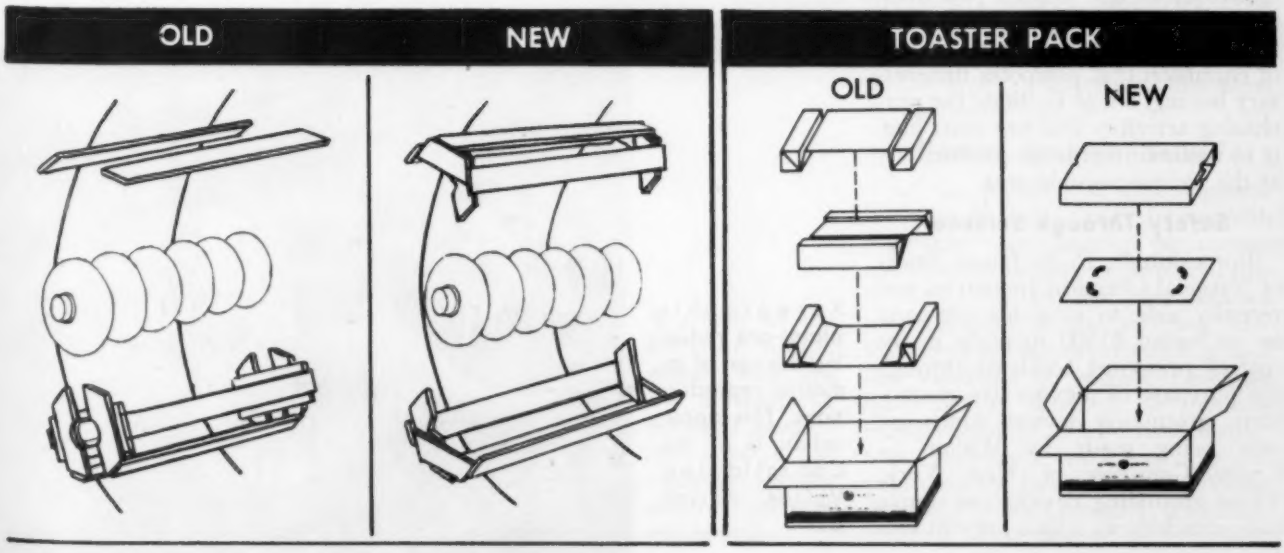
Please turn to page 318

DISHWASHER CRATE



Open crate, used in place of former totally enclosed, cleated case, has actually reduced damage claims on shipments of dishwashers by a substantial amount. Laborers and materials handlers are more careful when they see that the contents are frgaile, do not rely on packaging protection and warning signs alone.

Wooden crates are required for outdoor storage of porcelain insulators. New interlocking crate design, standard for 15 different sizes, eliminates need for nailing on slats, is secured by simple wire strapping. Saving in labor cost, 32%. Right: Simplified toaster pack gives adequate protection with less material, reduced cost from 15½¢ to 9½¢, or 39%.



A quick look at a new industrial science

"Static" Can be Useful, Too

By Horace B. Winslow
Purchasing Agent
Electrical Industrial Corp.
Los Angeles

ELECTROSTATIC phenomena, such as the ability of a glass rod to attract bits of paper after it is rubbed briskly with a piece of silk, have been known to mankind since the dawn of civilization. Yet, prior to the present century, the most advanced scientists were inclined to regard the entire subject of electrostatics as "practical only for the development of new theories"—a view which is reflected to this day by the small amount of space that is devoted to this subject in a majority of scientific textbooks.

However, it now seems safe to say that electrostatics is no longer "the impractical science"; for, regardless of the fact that it has not yet been dramatized as much as possible for the general public, industrial applications for electrostatic phenomena are already quite numerous and still being developed at an accelerating pace.

This is a matter of considerable importance to the industrial purchasing agent, because knowledge of electrostatics and related potentialities is becoming increasingly essential—not only to eliminate the sort of confusion that promotes unnecessary buying, but to facilitate the purchasing activities that are most likely to maintain optimum productivity at the lowest-possible cost.

Safety Through Science

For example, P. A. James Brady of National Chemical Industries was recently able to save his company an estimated $1500 monthly in the cost of personnel accidents through the purchase of inexpensive electrostatic grounding devices which are now being made by Walter G. Legge Company of New York. These grounding devices are simple shoe attachments which prevent employees from acquiring strong electrical charges due to friction in walking—the same sort of friction that gives a person a jolt when he scuffs across a carpet or slides across an automobile seat and touches a metal door handle.

Frictional charges due to walking may sound rather insignificant, but in certain types of people they may be built up to a value of several hundred volts—enough to cause a person to slip in walking across a well-polished floor, and more than enough to create a spark for the detonation of explosive chemicals.

Ions Are Everywhere

According to current scientific hypotheses, the universe comprises two essential or basic elements—space and electrical particles. When the electrical particles are in motion, we have the phenomena of energy—including light rays from the sun and the heat of a roaring blast furnace, as well as the alternating current that operates an electric motor. On the other hand, if the electrical particles are static or at rest, we have the phenomena of material substances—including the air that we breathe as well as the liquids we drink and the chemical contents of the earth.

Minute electrical particles, in theory at any rate, become the atoms and molecules of material substances as the result of electromagnetic attraction—that is, the tendency of positive particles to unite with negative particles—and, in virtually all substances, excess quantities of electrostatic particles can be detected as "surface charges" of a positive or negative nature. For instance, delicate test instruments have revealed that the upper and lower surfaces of clouds have predominant positive and negative charges while the surface of the earth as a whole has a "ground" or negative charge.

In normal circumstances, surface charges are difficult to observe; but, when two different materials such as cotton and a plastic molding are rubbed together, friction will cause one material to acquire a strong positive charge while the second material will assume an opposite charge, after which the aforementioned magnetic properties can be demonstrated.

By means of friction, it is there-



Xerographic plates are reducing the cost of industrial reproductions. This application is at the Consolidated Vultee Aircraft plant.

fore possible to generate current electricity with mechanical movements; and, conversely, it is possible to use current electricity to intensify predominant surface charges in material substances. For example, ferrous materials are inserted in solenoids or coils charged with current electricity to produce permanent magnets.

The charge that can be retained by a substance depends on the method of charging and the composition of the substance, and is usually measured in terms of the "flux" or force lines on or near the surface of the substance. Flux, in turn, explains the attraction of one material for another—such as the ability of silk-rubbed glass to pick up bits of paper, which are neither attracted nor repelled by strong permanent magnets.

Analysis By Electricity

A striking example of how these phenomena are revolutionizing modern industry is a "mass spectrometer," recently developed by Consolidated Engineering Corporation at Pasadena, Calif. Purpose of this instrument is to break down a material substance, through the use of magnetic fields of varied intensities, into basic electrical particles which can be electronically counted in order to indicate the chemical composition of the substance.

In the oil industry alone, alert purchasing agents have saved their companies millions of dollars by familiarizing themselves with the mass spectrometer and its ability to perform, in a matter of minutes, chemical analyses that would normally require long hours of painstaking labor.

Quartz, galena, Rochelle-salt, and other crystalline substances are sometimes called "piezoelectric" materials because they will manifest rather intense surface charges without preliminary electrification by artificial means. However, in addition to being somewhat rare, these crystals have never been completely satisfactory for industrial usage because they are rather difficult to fabricate, easy to damage, and somewhat inconsistently electrified.

Therefore, it is believed that recently-developed methods of synthesizing piezoelectric crystals (sometimes referred to as "non-metallic magnets") should greatly improve many industrial processes and products. For instance, in the manufacture of crystal "transducers" for the generation of ultrosonic energy, Brush Development Company of Cleveland, Ohio, has achieved unprecedented results through the production and use of ceramic crystals (some of which are comparable to ferromagnetic materials in terms of electrical flux); and for the production of loudspeakers, microphones, telephone equipment, electrical measuring instruments, etc., reputable engineers currently believe that similar crystals made from plastics can be used in place of permanent magnets and electromagnets to fabricate better products at a lower cost.

The first synthetic piezoelectric crystals are believed to have been made by allowing molten waxes to solidify in a high-voltage electric field some 25 years ago; but, despite their uniform and intense electrification, these crystals (called "electrets" by their Japanese inventor) lacked the physical properties that could have enabled them to replace natural piezoelectric crystals. Followup developments were somewhat retarded by the belief that crystalline materials had to be charged as they were solidified from the liquid state, a difficult task when it is necessary to electrify materials with high molten temperatures; but now it is a rather well-known fact that dielectric substances can be polarized at room temperature, much the same as metallic substances are magnetized.



Electrostatic charges in the human body can be a serious hazard when handling explosive chemicals, unless preventive measures are employed.

One of the more interesting uses for synthetic piezoelectric crystals was recently suggested by Stanley Wagoner, purchasing agent for Arizona Food Products. It involves the use "non-metallic magnets" for the removal of foreign matter, such as dirt, from farm products—the way metallic magnets are used to extract ferrous impurities from materials now processed or employed in virtually all modern industries. The idea is, of course, to select crystals with varied flux ratings, depending on the types of impurities that must be eliminated.

Plastics Problem Solved

In the molding of thermoplastic compounds such as polystyrene with high-frequency heating equipment, manufacturers have experienced difficulties due to the unintentional electrification of the molding materials—a phenomenon which caused the moldings to attract unsightly quantities of dust, or to function unsatisfactorily as electrical insulators. However, thanks to an idea proffered by John Riley, P. A. for Mason Plastics Company, a number of West Coast fabricators have been



Engineers of the Birtcher Corp. make extensive use of magnetic test and production units in developing modern electro - medical equipment.

able to continue the use of high-speed molding equipment in connection with the less expensive thermoplastics by incorporating "anti-static" chemicals in their molding compounds.

Incidentally, the term "anti-static" is a technical misnomer which is apparently being used in the absence of a better word; for, as previously indicated, there is no such thing as a material which lacks electrostatic properties. However, there are many substances which will not acquire intense electrical charges at the short-wave heating frequencies used in molding plastics.

Dust Elimination

A number of electrostatic smoke collectors have been developed for industrial usage as the result of recent municipal campaigns to eliminate atmospheric smog, and their purpose in general is to make use of high-voltage current to provide a charging field which will cause smoke particles to be electromagnetically attracted to metallic smoke-collection units. In theory, equipment of this type—by virtue of low cost and basic simplicity—should provide an ideal answer to the smog problem; but, in actual practice, the electrostatic collectors thus far developed have been most satisfactory when used in connection with other types of smoke-reclamation equipment.

Better Coating Methods

Better results have been obtained with electrostatic charging equipment for the deposition of organic coating particles—that is, in the process known as electrostatic spraying—due to the absence of a temperature problem. Electrostatic spraying consists of utilizing fixture-mounted spray guns to eject lacquers, enamels, etc., through a sequence of fine ionizing wires (which may be charged with as many as 100,000 volts of low-amperage current) so that the coating particles will be electromagnetically charged and attracted to conveyor-grounded products. Because this conserves coating materials, simultaneously increasing production and minimizing labor requirements, purchasing agents in a variety of mass-production industries have reportedly saved as much as $100 per hour of the normal cost of finishing operations by advocating the use of electrostatic spray equipment.

A variation of the electrostatic spraying technique has been developed by Ransburg Electro-Coating Corporation to permit the use of high-voltage charging equipment for dip-coating purposes. It consists of passing dip-coated products over a high-voltage grid by means of an electrically-charged conveyor, so that electrostatic attraction will enable the grid to withdraw "teardrops" of excess coating materials from the bottom surfaces of the products. This has yielded greater returns than the electrostatic spraying process in some instances because it has increased the number of practical applications for the dip-coating technique, which necessitates the use of relatively inexpensive equipment.

Xerography—A New Process

Curiously enough, the materials that readily conduct current electricity will not usually retain as much of an electrostatic charge as titanate ceramics and other strong "dielectrics" after they have been exposed to a saturating electrical current or an electromagnetic field. For example, soft grades of iron cannot be magnetized or electrified as intensely as polystyrene plastics.

However, it is a rather noteworthy fact that the electrification of many materials is dependent on circumstances as well as material properties. For instance, metals and nonmetals such as selenium and sulphur will retain strong electrostatic charges in absolute darkness but not in sunlight or brightly-lighted rooms.

The latter phenomena are significant as well as interesting; for, in addition to having permitted revolutionary new developments in the field of xerography, they are responsible for such well-known products as selenium rectifiers and the photo-electric cell.

"Xerography", incidentally, is a generic term which has been coined to designate a group of electrostatic processing methods which are of particular importance to the printing trades and in a growing number of industrial activities which involve the use of photographic or photostatic reproductions. The commercial development of these processes was instituted by Haloid Company at Rochester, N. Y., and is now continuing at such a pace that many enthusiasts believe that xerography will eventually become the predominant force in virtually all reproduction fields.

A typical xerographic process, which has been used to duplicate industrial diagrams, consists of electrostatically sensitizing a selenium-coated plate in a high-voltage electric field, exposing the plate with a camera or by contact printing methods so that its electrostatic charge will be dissipated by light to varied degrees in different areas, and developing the exposed image on the plate with colored powders—electrostatic nature of which permits the powders to create a visible image in accordance with their affinity for the electrostatic charges remaining on the plate. Developed images on selenium-coated plates can be transferred by heat and adhesion to non-sensitive materials, such as paper sheets, so that the plates can be recharged and reused indefinitely—thus creating extremely durable and accurate reproductions without requiring repeated expenditures for sensitized films and papers with varied reproduction qualities.



Ceramics? Yes, but they have the properties of permanent magnets, too, as produced by the Brush Development Co., Cleveland.

Industry's prime problem in adjusting its methods to "The Distribution Age"

Reducing Costs of Distribution

By Paul V. Farrell

KEY to the continued success—or ultimate failure—of our great industrial machine may be found in what we do in the next few years about reducing distribution costs.

This is the opinion increasingly voiced by industry leaders and cost analysts who see in scientific distribution the next logical and necessary step forward from the present high degree of production efficiency. We must, they say, find better and cheaper ways to sell and find new markets for the tremendous amount of things that technological progress has enabled us to manufacture.

Recently PURCHASING conducted a survey among a cross-section of purchasing agents in all parts of the country to obtain first hand observations and opinions on what advances are being made in reducing marketing costs, and what opportunities exist for further improvement. Purchasing men, in a sensitive spot in the distribution system, have a practical knowledge of the hows and whys of getting goods where they are needed, as rapidly and cheaply as possible. The large number of replies and the unusual amount of comment produced by the survey reveal an intense and constructive interest in cutting the costs of distribution and bringing its efficiency to a par with that reached in the production phase.

Numerically, the purchasing agents looked at present distribution problems, and the outlook for improvement, this way: more than two out of three (68%) have noted a definite effort on the part of suppliers to increase the efficiency of distribution. Slightly more than half (54%) report that they are being solicited to a significant extent by suppliers operating beyond their natural or economical marketing areas. A large majority (81%) say that suppliers in their areas are improving warehouse facilities for more efficient distribution.

Scientific planning to provide a more even flow of materials, in place of seasonal peaks or alternating periods of shortage and surplus, was recognized as a primary need by 90% of the purchasing men. A comparable number (89%) feel that there is room for cost-saving improvements and simplification of packaging, without hazard to the products. Only 43% report that suppliers have sought their cooperation toward eliminating or reducing the small order problem, a persistent source of annoyance and expense to both buyer and seller. Three out of five (60%) say that government regulations on trade seriously increase distribution costs.

Room for Improvement in Sales Methods

Naturally enough, buyers' comments were numerous and pointed on that sensitive area of the distribution system closest to their daily experience — salesmen and salesmanship.

"Salesmen are eager and willing, but not too well schooled in knowledge of products, particularly the application of products to the business of the customer," said one P.A. "Often there is something new, or something old and forgotten, that could help a customer in difficulty. We look to the salesman for such help, but too often he does not know."

A similar point is made in another comment: "Distribution costs can be reduced by having well qualified sales engineers—qualified to make on-the-spot decisions, not only with the thought of obtaining an order, but also rendering service and satisfaction."

Another observation was that selling costs are inflated by "the carry-over of wartime habits—expensive entertaining, high priced hotel and other accommodations—and by poor coverage of territory by salesmen, jumping here and there instead of saturation of one area. . . We find salesmen operating from bases 600 miles away, who come in twice in one month, then don't show for six weeks to two months."

Excessive sales calls and duplicated effort came in for criticism in many of the replies. Some random comments: "Too many salesmen repeating calls when there is no application for their material. . . Have had several companies contact me through two or more salesmen. . . Effort should be made to cut down on the number of calls a salesman makes on one concern, thus increasing the number of customers he could handle. . . Many salesmen, otherwise cooperative, fail to heed my suggestions for less frequent calls; I know that I pay in the cost of materials for this waste of salesmen's time."

Distributor Policies vs. Direct Sales

Distribution through local representatives and strategically located warehouse stocks is generally commended, with the qualification that this entails a responsibility for maintaining adequate stocks and service, and the observation that several abuses exist in the system. Among the statements on this point are the following:

"There are about fifteen distributors all trying to sell us the same product. This is economically unsound; so is the resultant tendency toward price cutting."

"Manufacturers should have their distributors handle *all* transactions in their area other than technical

advice. Manufacturers are prone to ask that sizable contracts be negotiated 'direct'. If this were eliminated, the distributor would be more apt to take interest and work out mutual savings."

"In several instances where I have been advised by manufacturers that such-and-such company is their authorized distributor in this area, it develops that either the supplier is not furnishing sufficient stock to the distributor, or the distributor is not carrying enough stock to meet the demand, or better discounts can be secured on direct orders."

Intermediaries Often Delay Receipt of Material

"Commissions to manufacturers' representatives are unjustified when the representative plays no part in selling or servicing the account. I know of instances where a mark-up of 23% is granted to a so-called jobber who stocked nothing—simply mailed in the orders. In fact, the mark-up applied even when the orders went direct to the factory."

"Entirely too many middlemen are deriving unjustifiable profits by acting as intermediaries, often delaying instead of expediting receipt of material, and at the same time adding a considerable cost to the item in question."

"Many manufacturers are setting up their own warehouse facilities and eliminating local jobbers and supply houses. However, they seem reluctant to pass the apparent savings on to the customer."

Regional Hardships Due to Freight Costs

High freight rates and governmental regulations were blamed by several purchasing agents for some of the maladjustments in the distribution system. Disparities in cost, and the tremendous opportunity for improvement, are dramatically expressed by a distribution engineer for a large petroleum company. "We can move a gallon of oil, weighing about 7 pounds, from Texas to Boston cheaper than we can mail a post card the same distance—because of scientific distribution," he says.

The purchasing executive for a New York State manufacturer states that the Public Service Commission and ICC rules have created a situation where he can buy steel from a supplier 300 miles away, operating his own truck delivery, more economically than he can buy the same material from a supplier only 20 miles away, who depends on a licensed carrier.

Offered as a similar example by another P.A. was a recent ICC authorization to the express company permitting twice the first class rate on bars, pipe and tubing above 16 feet.

"The 3% tax on transportation should be wiped out," says another New York buyer. "Return of the old basing point pricing on steel would lessen our cost appreciably in this locality."

"Exorbitant freight rates are making it increasingly difficult to lower costs on the West Coast," one answer read. "Carriers are cutting their own revenue by forcing customers here to obtain goods locally. Eastern suppliers would do well to improve distribution facilities to their West Coast customers—their greatest potential market."

Similar sentiment, combined with news that the situation is improving, comes from another expanding section. "The construction industry in the South," says this P.A., "is definitely hampered by high freight rates. Quite a large number of manufacturers and distributors call on us with a view of securing warehouse facilities in the South, to put them closer to an economical marketing area. Many present warehouses in this territory are being revamped and modernized to more efficiently handle and distribute various products."

Solicitation of business beyond a supplier's natural area, cited in several of the replies, not only adds transportation cost but also lengthens delivery time. "These people waste our time and their own," says a New Jersey buyer. "The policy must necessarily raise costs to the people that do business with them."

A governmental buyer suggests that every effort be made to place contracts with suppliers within the geographical area where supplies are to be used, thus easing distribution burdens and costs.

Simplified Packaging for More Economical Distribution

Progress in simplification and standardization was widely noted as contributing to better distribution, with general agreement that there is still considerable room for improvement. Package standardization by pole line hardware manufacturers was singled out by several respondents as an outstanding example, reducing cost of handling, making more efficient use of storeroom space, and cutting down on safety hazards by limiting the weight of individual packages.

At the same time, a number of replies point out that poor packaging—regardless of simplicity—is also a danger, involving the possibility of damage to products. The vice president of a large midwestern manufacturing company remarks, "There is no question but that some things are overpackaged. We ourselves have made a serious study of this problem over a long period. Generally speaking, however, we would prefer to see goods overpackaged rather than underpackaged. Our complaints to vendors arise more from damage of underpackaging."

Economical Distribution Is a Mutual Problem

The small order problem is one of the persistent obstacles to lowering the cost of distribution. It has received a lot of attention on the part of buyers and sellers alike. High unit prices quoted on small quantities, and assessment of minimum orders charges or service charges to discourage small orders, are described as methods used by some sellers. On the buyer's side, the following comment is of interest:

"Better warehousing facilities *by the purchaser* to take advantage of quantity prices and reduced paper work when one large order will take the place of numerous small orders, is No. 1 on the distribution cost reduction program. Numerous advances have been made by sellers to cut costs by increased quantity packaging."

Customer and Supplier Share Responsibility

The need for united effort in meeting this and other distribution problems is widely stressed. The P.A. for a large implement manufacturer writes: "The elimination of peaks and valleys, alternating surplus and shortages, is a joint responsibility of customer and supplier. Where production facilities are not great enough to meet peak demand, it is the supplier's job to advise the customer, and it is to the customer's advantage to secure equitable deliveries during the time when capacity is available."

Another respondent sums it up this way: "Scientific distribution is deserving of the same top level consideration as sales, production, scheduling, purchasing, and materials control. Good purchasing requires a working knowledge of and concern for all these functions of industry as they affect purchasing."

Ask the man who has a good department

PURCHASING AT PACKARD

By Dwight G. Baird

LOGICAL organization, with definite delegation of authority and responsibility, provision of modern aids for buyers, and simplified procedures, are features of the procurement program at the Packard Motor Car Company, Detroit.

Volume of purchases in 1949, when Packard shipped 105,087 cars, was approximately 150 million dollars. Outside purchases account for about 80% of manufacturing material costs; the other 20% is manufactured in the plant. Production parts, including car bodies, last year amounted to roughly 135 million dollars of the total, while the remainder was made up of machinery and equipment, supplies (including tools, maintenance, and miscellaneous non-productive materials), and service parts and accessories.

The organization consists of three groups: purchasing, clerical, and follow-up.

Purchasing Section

Heading the department is R. R. Rees, Director of Purchases, who joined Packard 35 years ago and came up through the Plant Engineering Department. Having had long experience as an engineer and plant manager, Mr. Rees is particularly well qualified to work in close cooperation with engineering, production, inspection, and other departments, to understand their purposes and problems, and to give them the kind of assistance which they have a right to expect of their Purchasing Department. In addition, he is kept regularly and promptly informed of new developments in the company's program, by attending the semi-weekly "alteration meetings" at which changes in car parts are discussed and decided upon.

Many such changes are suggested by suppliers, to the mutual benefit of the Packard company and themselves. In such cases, the head of the Purchasing Department is, of course, the one who presents them to the committee for consideration. Others are initiated by engineering, inspection, production, or other departments. All suggestions are discussed pro and con, and changes in design or specification are authorized or rejected. Whenever changes are authorized, the Director of Purchases is right there, and knows all about the what and the why of each such authorization.

Assisting Mr. Rees are thirteen buyers and one assistant buyer. Of these, two buy bodies and body materials, eight buy production parts, one buys machinery and machine tools, another buys miscellaneous supplies (including foundry supplies), one buys plant equipment and maintenance items, and the other buys service parts and accessories.

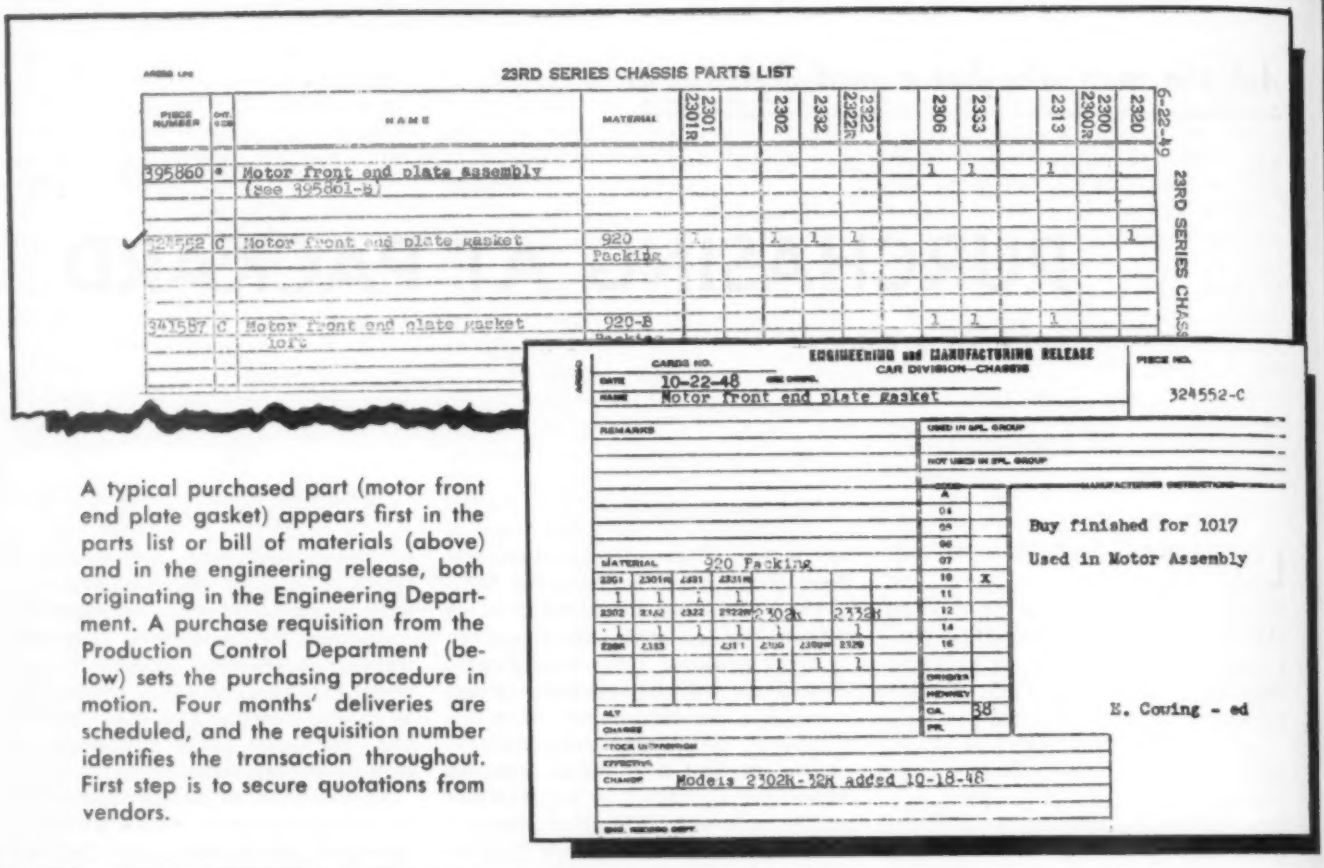
All buyers have individual offices, suitably furnished for the conduct of their purchasing activities and for interviewing. Each has a set of loose-leaf binders on his work table, containing information on trim materials, accessories, special equipment, export, commodity prices, etc. With the exception of desk-drawer files, no other filing equipment is kept in the individual offices.

In addition to actual quotations on all commodities which he buys, listing all fluctuations since the end of World War II, each buyer has a graph of raw material prices, for visual reference and review. Quotations and charts are kept up to date by the clerical section.

Between each pair of buyers' offices, with communicating doors, is a secretarial office, in which one secretarial assistant serves two buyers. In this office are the buyer's correspondence and card files. Card files contain, among other things, source cards, release cards, change order notices, and cost information. Parts history cards are kept in the clerical section, as described be-

R. R. Rees, Director of Purchases, Packard Motor Car Company





23RD SERIES CHASSIS PARTS LIST

PIECE NUMBER	CHG. SUF.	NAME	MATERIAL	2301 2301R		2302	2332	2322 2322R		2306	2333		2313	2300 2300R	2320
395860	*	Motor front end plate assembly (See 395861-B)								1	1		1		
324552	C	Motor front end plate gasket	920 Packing	1		1	1	1							1
341587	C	Motor front end plate gasket	920-B Packing							1	1		1		

6-22-49 23RD SERIES CHASS

ENGINEERING and MANUFACTURING RELEASE
CAR DIVISION—CHASSIS

CARDS NO.
DATE 10-22-48
NAME Motor front end plate gasket
PIECE NO. 324552-C
REMARKS
USED IN SPL. GROUP
NOT USED IN SPL. GROUP
MANUFACTURING INSTRUCTIONS
Buy finished for 1017
Used in Motor Assembly
MATERIAL 920 Packing
2301 2301R 2321 2321R
1 1 1 1
2302 2332 2322 2322R 2302R 2332R
1 1 1 1 1 1
2306 2333 2311 2300 2300R 2320
1 1 1
A 04 05 06 07 10 X 11 12 14 16
ORIGINAL MIMEOGRAPH CA 38 PRL
E. Coving - ed
ALT
CHANGE
STOCK DISPOSITION
EFFECTIVE
CHANGE Models 2302R-32R added 10-18-48
SHIP. RECEIVING DEPT.

A typical purchased part (motor front end plate gasket) appears first in the parts list or bill of materials (above) and in the engineering release, both originating in the Engineering Department. A purchase requisition from the Production Control Department (below) sets the purchasing procedure in motion. Four months' deliveries are scheduled, and the requisition number identifies the transaction throughout. First step is to secure quotations from vendors.

PURCHASING DEPT. COPY

PURCHASE REQUISITION

Date 9/27/48
All models less 2306-33-13
For
Charge 201
Terms Net 15th prox
F.O.B Worcester

No S 69572

Order From Vellumoid Company
Address 54 Rockdale Street
Worcester 6, Massachusetts
Ship to Rec. Dept. A Division
Via

66,000
16,000-A
50,000

Price

324552 Motor Frt. End Plate Gasket
To B/P

Delivery Feb. 11,000 - March 15,000 — April 14,000 — May 10,000

FINISHED ☐ SHIP. PR. ☐ ROUGH ☐ LABEL ☐

ORDERED BY | DATE | CHECKED BY | ISSUED | APPROVED | BUYER | PURCH. REQ.

THIS IS A REQUEST FOR QUOTATION ONLY—NOT AN ORDER

PACKARD MOTOR CAR COMPANY
CAR & MARINE ENGINE DIVISION
1580 EAST GRAND BLVD.—BOX 117
DETROIT 32, MICHIGAN
PURCHASING DIVISION

Vellumoid Company
54 Rockdale Avenue
Worchester 6, Massachusetts

Date 2/10/49

Gentlemen: Please USE THIS FORM to quote us on the following material.
Kindly sign and return 2 copies to reach us not later than at once
to the attention of
D. C. Martin Buyer

PART NO.	QUANTITY	NAME	UNIT PRICE	TOOL COST
324552	10,000 per month	Motor Frt. End Plate Gasket To B/P Attached		

low. Business callers are received through the secretarial office. As a general rule, secretarial assistants do not take correspondence. This is dictated on records and transcribed by Dictaphone operators in the clerical section.

Basic Procedure

The company is served by approximately 3,500 suppliers, including both production and non-productive items. About 400 suppliers furnish production parts and materials regularly.

When a manufacturing schedule has been approved, five basic types of standard forms are used to authorize and complete purchases. These are: (1) a bill of material issued by the Engineering Division; (2) production release card, also from Engineering; (3) purchase requisition; (4) purchase order; and (5) purchase order change notice.

The bill of material is essentially a list of parts for each model, with part numbers, descriptions, and usages of all parts required. The buyers also have a copy of the car authorization and production schedule, as well as the specifications; hence they know how far ahead they can buy. In the case of production parts, however, they do not make the buys until they receive the purchase requisition from Production Control.

PURCHASING DIVISION PACKARD MOTOR CAR COMPANY

R. R. REES
Director of Purchases

Buyer, A. H. DRAKE
- Axle Cases
- Brakes
- Carburetors
- Clutches, Frames
- Overdrive Units
- Shock Absorbers
- Steering Gears
- Wheels, Tires

Buyer, C. H. LANDINE
- Levers, Gear Shift
- Front Suspension Parts
- Mufflers, Piston Rings
- Pumps, Fuel & Oil
- Oil Purifiers & Seals
- Springs, Front & Rear
- Steering Wheels, Bearings
- Paints, Lacquer, Thinners
- Bumpers, Bumper Guards
- Trim Mouldings
- All Trim Rings
- Tubes, Formed

Buyer, L. A. JOHNSTON
- Bolts, Nuts, Washers
- Cotter Pins
- Screws
- Nails, Tacks
- Studs
- Ferrules
- Plugs
- Rivets
- Rods, Misc.

Buyer, J. D. ANDERSON
- Machinery
- Gauges
- Tools: Standard
  Special
  Permanent
  Expendable
- Spare Parts for Tools
- Machine Repair Parts

Buyer, R. D. CODY
- Batteries, Coils
- Distributors
- Starting Motors
- Generators
- Spark Plugs
- Lamps, Horns
- Gauges & Instruments
- Clocks, Radios
- Directional Signals
- Wiring & Connectors
- Mechanical Rubber Parts

Buyer, A. T. HOLLAND
- Screw Machine Parts
- Hose Clamps
- Misc. Fittings
- Oil Dip Sticks
- Exhaust Pipe Covers

Buyer, E. L. FRANK
- Castings
- Forgings
- Patterns
- Stampings
- Fans
- Pistons

Buyer, E. M. YODER
- Maintenance Supplies
- Electrical Supplies
- Plumbing Supplies
- Rubber Products
- Coal
- Motors
- Motor Repairs
- Bearings
- Zone Equipment for Service Division
- Maintenance & Construction Steel

Buyer, A. W. TAYLOR
- Car Service Parts
- Small Volume Accessories

Buyer, L. A. HITTEL

Asst. Buyer, W. J. HOLMES
- Briggs Account
- Henney Account
- Body Trim Materials
- Special Assignment

Buyer, R. A. SMITH
- Steel
- Brass
- Bronze
- Copper
- Pig Iron
- Foundry Metals
- Aluminum
- Bronze Bearing Bar Stock
- Foundry Coke

Buyer, D. C. MARTIN
- Gaskets
- Chassis Felt & Fibre Parts
- Cables, Misc.
- Misc. Items

Buyer, W. F. WISEMAN
- Boxes, Wood & Fibre
- Compounds, Solvents
- Foundry Supplies
- Factory Supplies
- Grinding Wheels
- Hospital Supplies
- Plating Supplies
- Lumber
- Gasoline, Oil, Greases
- Stationery, Printing

Supervisor, B. BURKHEISER
- Dictaphone Operators
- Typists
- Clerical
- Invoices
- Statistical

Purchase orders usually are placed with suppliers on a 4-months basis, depending on availability of materials, cycles of operation, and other factors. If a supplier can effect economies by setting up long runs on a part, he may be covered for a longer period.

Clerical Section

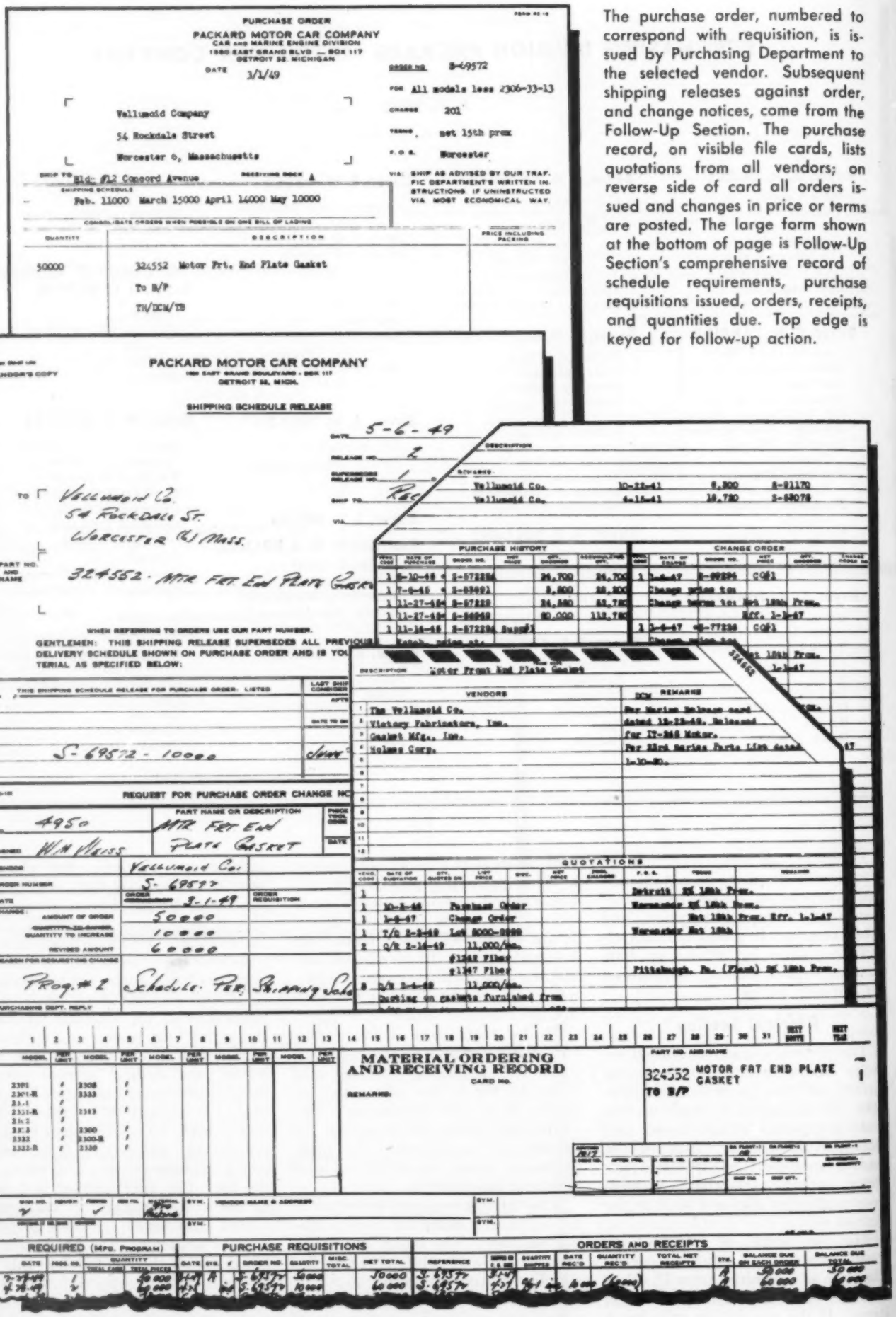
The clerical section is located directly across a corridor from the buyers' offices. Its personnel numbers 23, including Dictaphone operators, typists, clerical, invoice and statistical assistants. Four of the typists specialize on writing purchase orders. Purchase requisitions and other files are kept in the clerical office.

The majority of requisitions come from Production Control. They are also received from 16 other sources, for other than production items. If the requisition calls for a part or item that is already in use, a clerk pulls the purchase record history card, attaches it to the requisition, and sends it to the appropriate buyer, who then makes the buy and returns the requisition and history card, with necessary write-up, to the clerical section for writing the purchase order.

If the requisition is for a new part, the buyer's secretarial assistant pulls the applicable source card from the file in her office, and attaches it to the requisition. The buyer then sends out a request for quotations, accompanied by blueprints or other specifications and pertinent information.

This request is a form letter, written in quadruplicate for each potential supplier. The buyer keeps the fourth copy and sends three to the supplier, asking the latter to fill in his quotation, keep the original, and return two copies. When these quotations are received, the clerical section retains one copy and sends the other to the buyer, who then files it in place of his fourth (unpriced) copy. When he has obtained sufficient bids, he makes a tabulation, showing each vendor's piece costs and tool costs (if any), and submits it to the Director of Purchases for final review and decision.

Meanwhile, as quotations are received, the clerical section enters them on the purchase record history card. This card is of the VISIrecord type, 10 x 7½ inches in size, corner cut, and having a half-inch visible margin at the right when in the file. The part number is typed on the visible margin, in the upper corner, and cards are filed in part number sequence. The part name is typed across the top. Below this is a field providing spaces for twelve vendors' names, with remarks opposite each. Below this is a field



PURCHASE ORDER

PACKARD MOTOR CAR COMPANY

CAR AND MARINE ENGINE DIVISION

1580 EAST GRAND BLVD — BOX 117

DETROIT 32, MICHIGAN

DATE 3/1/49

ORDER NO. S-69572

FOR All models less 2306-33-13

CHARGE 201

TERMS net 15th prox

F. O. B. Worcester

VIA: SHIP AS ADVISED BY OUR TRAFFIC DEPARTMENT'S WRITTEN INSTRUCTIONS IF UNINSTRUCTED VIA MOST ECONOMICAL WAY.

Vellumoid Company

54 Rockdale Street

Worcester 6, Massachusetts

SHIP TO Bldg. #12 Concord Avenue RECEIVING DOCK A

SHIPPING SCHEDULE

Feb. 11000 March 15000 April 14000 May 10000

CONSOLIDATE ORDERS WHEN POSSIBLE ON ONE BILL OF LADING

QUANTITY	DESCRIPTION	PRICE INCLUDING PACKING
50000	324552 Motor Frt. End Plate Gasket To B/P TH/DCM/TB	

PACKARD MOTOR CAR COMPANY

VENDOR'S COPY

1580 EAST GRAND BOULEVARD - BOX 117

DETROIT 32, MICH.

SHIPPING SCHEDULE RELEASE

DATE 5-6-49

RELEASE NO. 2

SUPERSEDES RELEASE NO. 1

SHIP TO Rec

VIA

TO Vellumoid Co.
54 Rockdale St.
Worcester 6, Mass.

PART NO. AND NAME 324552 - Mtr Frt End Plate Gask

WHEN REFERRING TO ORDERS USE OUR PART NUMBER.

GENTLEMEN: THIS SHIPPING RELEASE SUPERSEDES ALL PREVIOUS DELIVERY SCHEDULE SHOWN ON PURCHASE ORDER AND IS YOU TERIAL AS SPECIFIED BELOW:

THIS SHIPPING SCHEDULE RELEASE FOR PURCHASE ORDER: LISTED	LAST SHIP COMPLETED
	AFTER
	DATE TO BE
S-69572 - 10000	Shipp

REQUEST FOR PURCHASE ORDER CHANGE NO

TO 4950	PART NAME OR DESCRIPTION Mtr Frt End Plate Gasket	PROD. TOOL ORDER
SIGNED W.M. Voss		DATE
VENDOR	Vellumoid Co.	
ORDER NUMBER	S-69572	
DATE	ORDER 3-1-49	ORDER REQUISITION
CHANGE: AMOUNT OF ORDER	50000	
QUANTITY TO INCREASE	10000	
REVISED AMOUNT	60000	
REASON FOR REQUESTING CHANGE	Prog. #2 Schedule Rec.	Shipping Sche
PURCHASING DEPT. REPLY		

DESCRIPTION Motor Front End Plate Gasket

	VENDORS	DCM REMARKS
1	The Vellumoid Co.	Per Marion Robson card
2	Victory Fabricators, Inc.	dated 12-29-49. Released
3	Gasket Mfg., Inc.	for 17-248 Motor.
4	Holmes Corp.	Per 22nd Series Parts List dated
5		1-10-50.
6		
7		
8		
9		
10		
11		
12		

PURCHASE HISTORY

VEND. CODE	DATE OF PURCHASE	ORDER NO.	UNIT PRICE	QTY. ORDERED	ACCUMULATED QTY.
1	5-10-48	S-67228		24,700	24,700
1	7-6-48	S-63091		8,800	33,500
1	11-27-48	S-67229		24,580	58,080
1	11-27-48	S-66969		80,000	138,080
1	11-16-48	S-67229 Suppl			
	Vellumoid Co.			10-22-41	8,800
	Vellumoid Co.			4-15-41	18,720

CHANGE ORDER

VEND. CODE	DATE OF CHANGE	ORDER NO.	NET PRICE	QTY. ORDERED	CHANGE ORDER NO.
1	5-6-47	S-69296	COPY		
	Change price to:				
	Change terms to: Net 15th Prox.				
				Eff. 1-1-47	
1	5-6-47	S-77236	COPY		
	Change price to:				

QUOTATIONS

VEND. CODE	DATE OF QUOTATION	QTY. QUOTED ON	LIST PRICE	DISC.	NET PRICE	FINAL CHARGES	F. O. B.	TERMS	REMARKS
1									
1	10-8-48	Purchase Order					Detroit	8% 15th Prox.	
1	1-6-47	Change Order					Worcester	8% 15th Prox.	
								Net 15th Prox.	Eff. 1-1-47
1	7/2 2-2-48	Lot 8000-9000					Worcester	Net 15th	
2	Q/R 2-14-49	11,000/lm.							
		@1348 Fiber							
		@1347 Fiber							
8	Q/R 2-4-49	11,000/lm.					Pittsburgh, Pa. (Plant)		8% 15th Prox.
	Quoting on gaskets furnished from								

MATERIAL ORDERING AND RECEIVING RECORD

CARD NO.

REMARKS:

PART NO. AND NAME 324552 MOTOR FRT END PLATE GASKET

TO B/P

MODEL	PER UNIT	MODEL	PER UNIT	MODEL	PER UNIT	MODEL	PER UNIT	MODEL	PER UNIT
2301	1	2308	1						
2301-R	1	3333	1						
2311	1								
2351-R	1	1313	1						
2312	1								
3312	1	2300	1						
3332	1	2300-R	1						
2332-R	1	2330	1						

REQUIRED (Mfg. Program)				PURCHASE REQUISITIONS						ORDERS AND RECEIPTS						
DATE	PROD. NO.	QUANTITY TOTAL CARS	QUANTITY TOTAL PIECES	DATE	STK.	P	ORDER NO.	QUANTITY	MISC. TOTAL	NET TOTAL	REFERENCE	NUMBER OF LINE	QUANTITY SHIPPED	DATE REC'D	QUANTITY REC'D	TOTAL NET RECEIPTS	STK.	BALANCE DUE ON EACH ORDER	BALANCE DUE TOTAL
2-7-49	1		50 000	2-7	R		S-69572	50000		50000	S-69572	3-4					R	50 000	50 000
4-11-49	2		10 000	4-11	R		S-69572	10000		60000	S-69572	4-1	4-11	4-11	10 000	(Item)	R	60 000	60 000

The purchase order, numbered to correspond with requisition, is issued by Purchasing Department to the selected vendor. Subsequent shipping releases against order, and change notices, come from the Follow-Up Section. The purchase record, on visible file cards, lists quotations from all vendors; on reverse side of card all orders issued and changes in price or terms are posted. The large form shown at the bottom of page is Follow-Up Section's comprehensive record of schedule requirements, purchase requisitions issued, orders, receipts, and quantities due. Top edge is keyed for follow-up action.

for entering quotations, coded with the number of the vendor as shown in the heading.

When the order is placed, the purchase history is typed on the back of the card. When prices change, a record of these is typed in a "Change Order" field on the back of the card. The bottom of the card is notched to fit over rods in the file drawers and to hold it upright in proper position.

When Packard installed this system about three years ago, a set of history cards was made up by transcribing data from purchase requisitions dating back to 1941. It now has eight single-pedestal files of them, totaling about 69,000 cards. Each unit contains three drawers, and each drawer is divided into three main sections and eight subsections, with four rows to the subsection, making a total capacity of 8,640 cards in each filing unit.

The purchase order is letter size, and consists of six copies. The original goes to the vendor; copies are distributed to Accounting, Purchasing, Cost Control, Follow-Up, and Receiving. Purchase requisitions are numbered serially, and these numbers become the purchase order numbers, which are typed in as the order is written. The buyer's name is typed, and the signature of the Director of Purchases is printed, on the purchase order.

The purchase order change notice is a conventional type form.

Follow-Up Section

The follow-up group numbers 19 procurement men and 10 clerical assistants. It is located in the Production Control Department. As it is customary for purchase order clerks in Production Control to analyze parts requirements and write purchase requisitions, it is considered logical at Packard to have the same men issue the releases and to follow-up after purchase orders have been issued by the Purchasing Department.

Packard has tried the plan of having a separate group of follow-up men in the Purchasing Department. However, the present arrangement has proved to be the most satisfactory. Buyers are relieved of considerable responsibility and an immense amount of detail, thus leaving them free to concentrate on negotiation and the selection of best sources. Production Control is relieved of speculation and anxiety about the status of orders, and of consequent telephone calls to Purchasing to make inquiries about them. It knows at all times just what the parts requirements are and it issues the shipping schedules and releases accordingly. If parts fail to arrive on time, it goes direct to the suppliers instead of taking the round-about route through the Purchasing Department.

Each procurement man in the follow-up section has a "deck of cards"—ordering and receiving records covering a specified group of material items. These cards are 10 x 11¼ inches in size, ruled on both sides, and kept in book-type files on portable stands. Days of the month are printed across the top margin, and are tabbed for follow-up. These procurement men thus know how large a bank of each part should be on hand. Whenever such a bank gets down to a 4-days stock, it goes on the critical list. As an additional check and safeguard, in case there should be some unknown shrinkage which might otherwise be overlooked, the materials men in the shop turn in a list of any items of which they have less than a 4-days supply.

One clerical assistant for each two procurement men makes the necessary bookkeeping entries for them in their card files.

When materials are received, notice is put on a Teletype network to all departments concerned, including procurement. Clerks in the latter group post this information to the record cards. When parts are placed on the critical shortage list, the Receiving Department is notified to report receipt of them immediately when they arrive. When they do arrive, even before they are checked and inspected, Receiving transmits this information by Telautograph to a station located right at the desk of the supervisor of the follow-up group.

Invoices go direct to the Accounting Department. They are sent to Production Control to be checked with receiving slips. If they are correct, invoices are stamped and returned to Accounting for payment. If they are incorrect, the discrepancy is spotted by Accounting and is corrected. If parts are damaged or not up to specifications, the Purchasing Department is notified, and negotiates with the vendor for replacement.

The Purchasing Department works closely with the Materials Handling Department, and arranges with suppliers to have their products shipped in such form as to be most convenient and economical to unload and handle at the Packard plant.

As the procurement men in Production Control are in day-to-day touch with parts requirements, and have rather a close relationship with suppliers, they acquire experience that helps to qualify them to become buyers. Hence it is the general policy of the Purchasing Department to recruit new buyers from this group.

The purchase record is kept in a visible file, with approximately 69,000 cards providing a complete history of purchase transactions, item by item.



Clerical section of the Purchasing Division, located directly across a corridor from the buyers' offices.



To make your expediting more effective

put yourself in the vendor's place

EXPEDITING As the Expeditee Sees It

By Julian G. Davies

THE spilling of the Red Tide across the 38th Parallel has produced many uncertainties, but one thing we may assuredly look for is the return of the Expediter in all his glory. Hostilities produce a business climate in which the expediter propagates and flourishes like the green bay tree. The impact of stepped-up military preparations on an already overburdened national production machine will provide the makings of another field day for him. Purchasing agents, particularly those having important requirements of metals, wood products, textiles, rubber, leather, and many other commodities essential to a military preparedness program will quickly sense the perplexing situation that is now developing, and must plan accordingly.

Much has been written regarding expediting methods, but practically all of it has come from the buyer's side. Just as the salesman must sell himself to the buyer, so the expediter must favorably impress the scheduling officers whose response spells success or failure for his efforts. The views of a representative cross-section of such officers in critical industries may serve to indicate those methods likely to produce the most benefit to the buyer and his company, and to show those which should be avoided if the efforts of the expediter are to achieve a full measure of effectiveness.

Scheduling — A Mutual Need

None of these vendor officials object to routine follow-up of orders by their customers. All suppliers realize that with modern systems control it is essential that the customer be fully informed regarding delivery dates. Most suppliers go to considerable lengths to inform customers promptly of unavoidable revisions of delivery promises. Even as you and I, the supplier also has difficulties in obtaining *his* raw materials, with problems of mechanical failures, recalcitrant labor, and many others. The vendor expects, and usually deals promptly with an inquiry received a week or ten days prior to the promised delivery, seeking assurance that the delivery date will be maintained.

Additional Work Is Involved

Some discretion should, however, be exercised by the customer in his follow-up activities. He must realize that extra work is involved—work which might be applied to better advantage if some of the following-up is unnecessary. Where the vendor has established a record of reasonable adherence to original delivery promises, or of prompt notification to the customer of unavoidable delays, follow-up work should be reduced to a minimum, and kept there.

Where experience has shown that a vendor's promises are habitually unreliable, the buyer may well be criticized for not changing his supplier, unless that condition applies throughout a particular industry, as it sometimes does. Certainly, the frequent failure to obtain deliveries on specified time does not enhance the reputation of the buyer in the estimation of his company associates. It can also add greatly to the work of himself and his staff.

It is in the field of "expediting," as distinct from "follow-up," that most vendor criticism arises. Most scheduling departments recognize that the expediter is in a tough spot. He must show results, or make way for someone who will. The purchasing agent to whom the expediter reports is in much the same position. Top officials of his company are breathing down his neck. With the prospect of work stoppages unless materials and components are made available on schedule, the pressure is tremendous, and is frequently passed along to the vendor in terms that too often are lacking in tact.

Scheduling people suggest that if the customer's purchasing agent and expediter would try to place themselves in the vendor's position, their entreaties might produce better results. Scheduling departments are developed and staffed to handle the recognized duties of the department, which keep them fully employed, particularly in times of stress. If their activities are hampered by catering to the needs of a constant procession of callers seeking delivery information, their efficiency is bound to suffer, and so are the interests of their customers.

Priority in Production

Schedulers—particularly for mills producing such commodities as lumber, or rolled bars, strips, plates, sheets, and similar metal products—point out that the time to emphasize the urgent need for material on a specific order is when that order is *first placed*, not after it has been placed on a mill schedule that must be closely adhered to.

Those making up a production schedule are often confronted with priority instructions from governmental agencies, and by the special requirements of many other customers, each of whom considers his own need as of first importance. Every effort is made to place the individual items in positions on the schedule that will most nearly meet needs of the customer and the requirements and capacity of the mill. The schedule, consisting of many scores of such items, is then put into production and raw materials

are lined up in proper order to produce them as they are listed.

It is apparent that many among customers' personnel have an inadequate conception of the extra work and loss of valuable time involved in changing the position of a single item in the production schedule, the issuing and distribution of "change" forms, the extra handling of raw materials, and the additional work thereby piled on the shoulders of mill people whose responsibilities in times like these are sufficient to extend them to the utmost without these added complications.

In pressing for special treatment, many customers overlook the fact that a chief responsibility of mill management is to produce at a profit. The production manager cannot possibly produce profitably if his schedule is frequently disrupted. Scheduling officers understand this, and have a decided aversion to ordering a change in the schedules which they have carefully drawn up and presented to mill management, definitely specifying the order in which various items are to be produced. Such changes could soon reduce production activities to absolute chaos.



Comparable to the confusion caused by changes in schedule position is that occasioned by alterations in size, grade, analysis, and other qualities, after the schedule has been turned over to the mill. In isolated instances, such changes cannot be avoided, but it would seem that lack of planning and of proper care in deciding and setting up the specifications are the chief reasons behind these hindrances to efficient production.

Another feature that the expediter is prone to overlook, but which is constantly uppermost in the minds of the vendor's scheduling officers is that each time a change is made, and an order taken out of its place and moved up on the schedule, a host of orders for other customers will be delayed.

The very fact that these other customers may have exercised forbearance and have not hounded the vendor for special consideration is bound to influence the hard-pressed schedulers against taking any action detrimental to their interests. Knowing from past experience that criticism and demands for explanation will result from delay to each item, thus compounding their problems, can it be wondered at that changes in mill schedules are looked upon with the proverbial jaundiced eye?

Evidence is not wanting that much expediting results from the acceptance by customers' sales departments of orders requiring delivery dates which anyone familiar with conditions should know are unreasonable. Such orders are accepted to keep them from competitors who also would be willing to promise impossible delivery dates.

The sales conscience is solved by a resolution to get the purchasing agent to "put the pressure on." The purchasing agent has no alternative but to get in there pitching, and tells his expediter in turn to take up the cudgels in the hope of extricating the sales department from the mess it walked into with its eyes wide open.

The Green Light

Many delivery jams are the result of needlessly deferring definite action on quotations from prospective suppliers. Where construction or other engineering work is involved, this condition is particularly prevalent. Hesitancy about giving the "Go Ahead" signal wastes valuable time for the supplier. Too often the customer works dangerously close to a deadline when orders could and should have been placed days, weeks, or even months earlier. When it is finally given to the supplier, it is usually accompanied by the well known pressure technique, all of which could have been avoided if the order had been placed more promptly.

The good will that an expediter is able to engender in the minds of the vendor's officials is his chief—usually, his *only*—stock in trade. Those with whom he deals are human beings who, while they may be hesitant about expressing their frank opinions of his methods, do plenty of thinking. His effectiveness will usually stack up in inverse ratio to the degree to which he continually makes a nuisance of himself.

Those back of him in his own organization, top management and purchasing department, should realize this. Many of his difficulties can be eradicated before they start.

(a) by careful planning and prompt action in his own company;

(b) by a knowledge of vendors' production problems;

(c) by the application of the Golden Rule (of which we don't seem to hear much these days); and

(b) by a knowledge of vendors' common sense in business contacts.

Plan factory and office space from the floor up

Proper Flooring is a Wise Investment

By Willliam Mueller

YOUR floors are costing you too much if they are expensive to maintain, are unsafe, are noisy, reflect glare, slow down production or materials handling, or damage products through seepage of moisture or alkali. Floors selected with "end use" in mind, and properly maintained, will eliminate these disadvantages and will help to keep your plant or office at peak efficiency while saving you money on your original flooring investment.

When planning to install floors in factory work areas, offices, executives' rooms and reception rooms, it is economical to choose the type of flooring best suited to your needs.

Most architects and building professionals agree that in floor installations it never pays to cut corners. This does not imply that the most expensive flooring is the wisest choice. There are times when the least expensive flooring may be the most practical.



Asphalt tile floor at the new General Electric Turbine Plant, Schenectady.

Factory Areas

Concrete ranks high among general-purpose floorings for many factory work areas because it is durable, fireproof, and stands up well under rough use. However, it originates considerable dust, and since it has no resilience, it is hard to walk or stand on and produces extreme fatigue. The fatigue factor can be minimized by installing resilient flooring on the concrete in front of machines and other places where workers must stand or walk, leaving the bare concrete exposed in areas where heavy loads must be moved.

For unusually heavy factory trucking, steel grids set in concrete prevent floor crackup. When the steel grids are inserted in small squares they lower repair costs, because only the affected area has to be lifted out and replaced.

Washing new concrete floors with a 10% solution of muriatic acid will remove dirt and any bloom which has come as the water evaporates from the floor. The floor should be treated with a liquid hardener or with a sealer to prevent "dusting." On an untreated concrete floor a fine concrete dust is apt to rise. In service areas, broom sweeping and an occasional scrubbing with warm water and a neutral soap are all the cleaning necessary.

Wood block flooring is often laid on concrete to provide resilience. Because wood tends to absorb grease and become slippery in time, and because the block is laid with the grain perpendicular, the surface is rough and hence difficult to clean. If heavy traffic must be considered, a resilient asphalt or rubber tile flooring can be used on the wood block everywhere except in traffic lanes. In addition to providing greater comfort for workers, this treatment will help to brighten up the interior. This display of brightness and color to improve worker morale cannot be achieved with a vast expanse of wood block alone.

Wood block floors, however, are about double the cost of top-grade concrete, and also double maintenance time and costs. These wood block floors require an oily sealer coat immediately after they are laid and are then polished mechanically with a rotary brush. Daily sweeping and weekly repolishing are required, but they are never scrubbed with water.



The decorative possibilities of asphalt tile are endless. It is quiet, resilient, and easy to maintain.

In factory offices and company cafeterias, the cheerful colors of asphalt or rubber tile flooring offer a bright contrast to the usually drab factory surroundings. Asphalt tile flooring helps to achieve a modern effect and at the same time is one of the most durable of all resilient floors. The greaseproof type is particularly suited to cafeterias because it is impervious to bits of greasy food particles dropped on the floor.

Other Plant Areas

This flooring is installed tile-by-tile, permitting the creation of a wide variety of original designs in many colors. Islands of tile forming an attracitve pattern around the tables and counters in a cafeteria can be made with inserts of colorful ribbon-like strips of the material. Numerals and letters can be used to insert the firm's name or slogan for added individuality.

Traffic directions can be indicated on factory or office floor work areas with feature strip, cut-out arrows, or picture-tiles. These may be used to indicate the location of a storeroom, stairway, elevator, rest room and other key points.

As this is the only type of resilient flooring that can be laid successfully on concrete which is in direct contact with the earth, it is used heavily for flooring basement areas and for basement stockrooms.

The Southern Bell Telephone Company, Charlotte, N. C., in its search for special flooring to meet the rigid requirements of a generating room, selected an asphalt tile floor covering, because of its acid-resistant property. The new General Electric Turbine Plant at Schenectady, New York, also chose 90,000 square feet of this flooring as the most practical for its purposes.

General Office Areas

In offices, asphalt tile is a natural choice for an all-purpose flooring because it is quiet and comfortable underfoot. It is economical because the original cost is low; it is easily and quickly installed and can be walked on immediately after installation; is extremely durable; colors can't walk off, because they go all the way through to the bottom; and repairs are easily made because affected areas can be replaced tile-by-tile.

Muddy footprints and tracked-in dirt constitute no problem in the office with flooring of this material, because dirt won't stick to its smooth surface. Moisture and soil can be wiped up with a damp mop. Routine sweeping and an occasional washing and waxing are all the care required to maintain its freshness. In fact, its cost per year of service is lower than that of any other resilient flooring.

For client and employee safety, it is practical for the floor buyer to know that anti-slip coefficient tests by the National Bureau of Standards show asphalt tile has generally the highest anti-slip coefficient of any type of resilient flooring. This material is composed largely of asbestos, which helps to make it combustion-resistant, another added safety feature.

Private Office and Reception Room

For distinctive executive offices, reception rooms and other areas where a luxurious atmosphere is desired, cork tile flooring is frequently specified by architects and designers. It comes in random shades, ranging from light oak to dark walnut. These natural variations of shading make it possible to get many decorative effects.

Super-Elasticity, Fire-Resistance

An outstanding advantage of cork tile is its elasticity, providing quiet, resilience and restfulness underfoot. The Eaton Research Laboratory at Cleveland selected a cork tile for its general office areas, because of its super-elasticity and quietness underfoot. Half of its substance is air, which makes it an excellent insulator, giving protection from heat and cold. It is not slippery, because cork grips any surface that is pressed against it; therefore, wet or dry, it is safe. Cork also sheds moisture

(*Please turn to page 326*)

Concrete floors are basic for heavy industrial uses. They can be treated to secure desired structural and surface properties



Wood flooring is serviceable and economical in first cost, but is vulnerable to grease and factory dirt.



When doing business with the Military

don't forget that we're on the same side

The Military-Manufacturing Team

By George C. Reinhardt ● Industrial College of the Armed Forces

CONCERN over price is probably the most important of the many new concepts of his job that have been forced upon the military procurement officer. Adequate quantity, delivered on schedule, passing required inspections, were formerly his only wartime considerations. Procurement officers often boasted of stealing a vendor, by bonus or other inducement, from some other government department or even another agency of their own department. Military procurement in all wars, except the last, thus was comparable to industrial ethics of the 19th Century *laissez-faire*.

In days of peace, Regulations with a capital R made the procurement officer price conscious. The low bid was sacrosanct, except to a skillful, experienced "operator". Even this price consciousness was in reverse—a sort of "how to get what we really need if some so-and-so underbids our selected vendor" mentality. Often that attitude was justified in the best interest of the Government. To a limited degree, it still is.

The General Accounting Office rules procurement with a rod of iron, unbendable by considerations of comparative value, as it valiantly guards against fraud.

World War II freed military procurement from much of the red tape that still binds non-military purchasing. The Armed Services Procurement Act (Public No. 413, 1947) with its 17 allowable exceptions to secret competitive bidding grants valuable freedom of action even in time of peace. 90% of the Air Force dollar value is now contracted by negotiation, with the Army and the Navy following the trend. All three will use it almost entirely in wartime. Increased experience with negotiated contracts in peace will ease the vastly expanded volume of war. Both Industry and the Military must iron out all petty elements of altercation during the less urgent negotiations of peacetime.

Confidential treatment of bidders' information is sacred in military procurement agencies. If leaks exist, they are limited to disclosures by unworthy employees subject to summary removal upon discovery. This is essential since the National Military Establishment is authorized, particularly in wartime, to demand extensive cost data from vendors. Thus we are in a more favorable position than most industrial buyers to determine a "fair or reasonable" price.

We are taught to use that favorable position to the utmost because our basic negotiation premise postulates a *reasonable* profit for the vendor, yet the prevention of *excessive* profits. Prevention of excess profits rather than their recovery by taxation, or even by renegotiation, is our directive.

It is a demonstrable fact that a firm making excessive profits while knowing that their income will be hit by excess profit taxes becomes careless of costs. Such action not only aggravates inflation, modern war's newest curse, but wastes national resources in labor and material. Not even the United States can stand that drain in total war. Consequently government procurement *must* aim at negotiating prices largely on a cost basis—not the costs of World War I *cost-plus-percentage-of-cost* contracts, nor even the World War II *cost-plus-fixed-fee*, but a reasonable cost reflected in a "right" price.

We recognize the extreme difficulties involved. Here particularly the team spirit exemplified in General Campbell's "Industry-Ordnance Team" is essential between vendor and buyer. Even where principles are accepted by both parties, each company, and probably each procurement agency, is inclined to view specific contracts as "special cases" where their own interests are concerned.

Cost's Eternal Triangle

Heinritz's text on purchasing cites as a three-way argument whether price should have a definite relation to cost (materials, plus production cost, plus overhead), whether it is determined by economic conditions, or whether solely by competition. The military is strongly pledged to the first of these three views.

In attempting to fix this "right" cost, military procurement uses a negotiating squad comprised of buyer, technical advisor, legal advisor, and cost analyst. In the ideal situation, the inclusion of vendors' personnel, representing "production", makes the team idea complete. Not two forces contending for advantage, but a group seeking the solution fairest to both user and producer, and consequently most beneficial to the national economy as a whole, must be the goal.

Is this an impossibility? Few persons charge the military with venal motives in procurement. Can we not expect that the vast majority of representatives of American Industry will be as responsive to the in-

terests of the nation? Prevention of every kind of waste has become an essential for the winning of modern, total war.

Negotiate an End of Waste

One of the greatest sources of waste has always been in slipshod methods of procurement. The National Military Establishment is constantly working toward reduction of this waste, introducing more efficient methods calculated to best support the national economy. But, as in every other phase of Industrial Mobilization, procurement must have the active cooperation of Industry, not a hidden resentment or even blind obedience. Military dogmatic ordering and red tape must go; Industry must forego the temptation to "make a killing" even if the opportunity presents itself.

HERE IS a frank statement from the standpoint of the Military Procurement Officer, on some of the basic issues involved in contracting for war production. It represents an approach to negotiating and purchasing policy and procedure that evey industrialist must recognize in the critical days ahead. There have been some traditional differences of opinion in military and industrial management, but nothing that cannot be reconciled through cooperation and agreement on basic objectives. And cooperation, in thinking as well as in action, is essential to national survival.

This article is an excerpt from one of the prize winning papers in the Boffey Memorial Award contest sponsored by the Educational Committee of the National Association of Purchasing Agents. Written prior to the Korean crisis, it is not only timely, but prophetic.

A further excerpt from Mr. Reinhardt's paper will be published in the November issue.

Negotiated contracts offer a field for that cooperation in agreeing upon "right" costs. Vendors do not normally offer such detailed information of their affairs to prospective customers. The National Military Establishment insists that they do so where negotiated contracts are accepted.

Old "Pork Barrel" Controls

Yet this procedure is only a progressive step from time-honored methods of awarding Corps of Engineers construction contracts under Rivers and Harbors appropriations, long familiar to the contracting field if not to manufacturing. This system required Engineer field offices to prepare, prior to opening any bid, a "government estimate" for performing the project. As the sealed bids were publicly opened and tabulated, the government estimate was also read. If the lowest bid was 20% higher than the government estimate, it could not be accepted. Readvertisement, or prosecution of the work by "force account" (laborers on government payroll, supervised by Engineer officers) was mandatory.

The right of a disgruntled bidder to appeal the accuracy of the official figures to the Chief of Engineers spurred field agencies to more accurate use of extensive experience and improved cost accounting. Records of the Corps of Engineers provide interesting research into Industry-Government cooperation. Estimates and the accepted bid were in a vast majority of instances, extremely close to each other. Few jobs were taken away from contractors because of excessive bids; fewer yet were the protests filed.

Extending this method unchanged to munitions purchases is not practical. Government agencies lack production experience in such fields comparable to the Corps of Engineers construction achievements. In many cases the items are so new that Industry itself has no experience exactly comparable. Moreover, preparing separate estimates is time consuming. The need is for a rapid "team estimate"—not rival ones laboriously balanced.

Cost Is Determinable

With due regard for Professor Lewis' warning that "estimated prices based on costs are of doubtful value", I offer a military rebuttal to his detailed objections.

1. "In many cases suppliers do not know their own costs" is undoubtedly true despite red-faced denials by Industry. The Corps of Engineers didn't really know theirs when first directed to prepare estimates, but they learned. Any industry which lacks effective costs today should welcome free assistance, even from a government cost analyst, in ascertaining them.

2. "Interpretation of costs calls for exercise of judgment, with consequent differences of opinion." True. Hence the plea for a cooperative spirit. Military *policy* is not unreasonable; there is no reason why its executives should be. Army Manual M601 directs that in cost evaluation attention is to be focussed upon major items in the estimate, types of items easily overestimated, and those which "offer great opportunities for including emergency allowances". There is always the possibility of converting expenses into a concealed form of profits. The record of World War II has too many such. *All* the mistakes of wartime procurement were not government-perpetrated, though many were.

3. "Suppliers will not divulge information" is covered by wartime law and peacetime acceptance of a negotiated type contract.

High Costs Hurt Nation

4. "Seller's costs do not determine his market price." In a competitive market he may have to sell at *less* than cost. However, the very size of military purchases, and their consequent effect on the national economy, necessitate special handling *outside* of competition. "Free" competition is impossible of attainment; a partial variety can be only harmful. Determination of price on the basis of "reasonable" cost is the only alternative that safeguards the national economy.

5. "Buyers are not interested in sellers' costs." Industry itself wide-

ly professes the doctrine of fair profit to vendors. From the military standpoint, the entire nation is vitally interested in keeping solvent industries which, in wartime, may produce 50% of the national product.

Even Professor Lewis seems to have posted his objections more as a warning of difficulties to be overcome than as a deterrent. He ends his comment encouragingly: "The cooperative approach to vendors' costs strengthens the buyer-seller relationship." A more accurate enunciation of the Military Establishment's intent would be difficult to phrase.

Who Dislikes Subsidies?

Military directives cover general rules on allowable profits. Large orders should command smaller profit per item; uncertainties of delivery schedules entitle the vendor to a higher price; assumption of risks by the Government instead of the contractor, provision of capital or facilities by the Government, tax remission through amortization speed-up, all should tend to reduce profit levels.

Consequently, under negotiated contracts for identical airplanes several corporations might be each receiving different rates of payment. Astonishing at first glance, but clear enough when the terms of all the contracts are known.

I am frankly confused as to what Industry's majority opinion may be regarding the subsidy principle. The record of World War I shows excessive profits accruing to low cost producers of coal when the Government gave an "across the board" raise in coal prices to bring in marginal production. Everyone, except certain mine owners, would have been better off if prices had been frozen and marginal producers subsidized. Proof that subsidies, properly utilized, actually reduce budgetary deficits and effect major net savings to the national economy in emergency periods, I leave to more learned pens, though I personally believe it.

If industry objects to "subsidies", why do most corporations continue to buy of an old established vendor when his price is undercut by a new competitor? What is that but a subsidy to retain services proved valuable in the past and, presumably, of future worth justifying the added cost? Yet if that corporation purchases more than the original vendor can produce, will it insist on paying the lower bidding competitor the higher price it gives to its established vendor? If that sounds like a foolish question, compare it with the arguments of selfish industrial or agricultural groups to obtain a general price increase in lieu of a frank open subsidy.

Subsidies are an effective means of bringing submarginal producers, usually of urgently needed materials, quickly and inexpensively into production without having to raise all producers an equal and, for them, unnecessary amount. The negotiated contract is useful here too, and can serve as a cloak to conceal the offensive term "subsidy" if Industry still objects to accepting it publicly.

The procurement problem for the National Military Establishment is fundamentally complicated by its dynamic nature. Even if the exact nature and amount of every one of the million of items needed to fight a war were catalogued today, that list would need revision constantly. But there is a basic, actually simple, problem for Industry if it is accepted by each corporation.

Self-Inventory for Mobilization

For the National Resources Board to determine, at top national level, the production capacity of the Nation, is a terrific task. To allocate that capacity wisely to various claimants, with constantly changing needs, is almost an impossible one. Yet for each corporation to determine its own capabilities under a war set-up is not difficult. No outside agency can do the job as accurately or expeditiously.

An Industrial Mobilization Plan for a corporation is no gobbledegook of military phraseology. It is a simple self-inventory of that corporation's physical and human resources, evaluated in terms of a war effort. Added up, the sum of those inventories provides the best, most accurate story of the National Industrial Potential.

What is the increased capacity realizable with present plant by adding another shift, increasing the number of workers, obtaining additional, readily installed equipment? What is the self-inventory of personnel, especially executive, technical, and skilled craftsmen groups? How many of these men, by reason of age, family status, etc., are likely to be called up for military service, and which ones should be deferred?

A number of corporations, large and small, have made such plans. Many more should do so. The Koppers Mobilization Plan was completed in a period of three months, including a specific inventory of capabilities for each plant, each operating division (including Research), and a summation of the unit plans into a corporate total.

Once such a plan is started, and National Military Establishment representatives called in to discuss it, the team spirit is really working. Advice by that corporation to the military in research, pilot model production of items mutually agreed upon, contract terms, stock control, specific draft deferments, and many other matters could be well understood—and on many points even definite conclusions reached.

Team Up — or Else!

The "cold war" has cost the United States more dollars than any fighting war in our history, the last conflict excepted. Price levels, like production volume, have soared past all records. Inflation is—let's let it go as "a serious threat".

Under these circumstances, the military budget is an even greater challenge than its immensity indicates; a challenge not only to the utmost efficiency of modernized military procurement, but to Industry as well. The budget contains no excess fat. Every dollar that does not do the full work contemplated by the budget planners detracts some necessary element in the national security. Can an Industry-Military team get together and function under it—not merely as well as during the past war, but better, by avoiding many of the mistakes of 1942-1945?

Years ago a retired soldier, Brigadier General Emery Upton, compiled a book of American war costs, 1776-1898. Had he lived, he might have added the record of two more wars without altering his basic findings. The United States, master of technical and business efficiency, devotee of life, fire, and accident insurance, has never learned to carry war insurance. Vast sums have always been spent *during* every emergency that could have been saved by a fraction expended forehandedly.

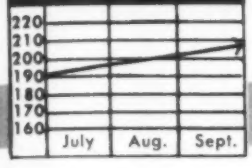
If today we appear to know better, the record counsels against undue optimism because there is a limit to the number of costly fumbles we can nationally afford. How many more times can we stage that "glorious" but so damnably unnecessary goal-line stand and then plunge the long hard way to victory?

Now is the time for Industry and the Military to get their heads together—not wait until an emergency bumps them painfully into contact.

Where We Stand

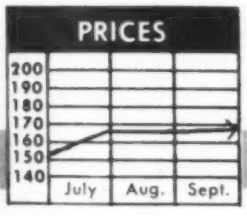
Today's Business Trends As Reported In Current Statistics

PRODUCTION



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1935-39=100	204 (est.)	199	170	+ 2.5	+20.0
Steel Production (Weekly)	000 net tons	1,936	1,931	1,589	+ 0.3	+21.2
Electric Power Production (Weekly)	mil KWH	6,029	6,247	5,258	— 3.5	+14.7
Bituminous Coal Production (Weekly)	000 net tons	10,020	10,560	6,155	— 5.1	+62.8
Auto, Truck & Bus Output (Weekly)	units	142,295	171,502	117,703	—17.0	+20.9
Petroleum Output (Weekly)	000 bbls.	5,839	5,568	4,851	+ 4.9	+20.4

PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS)	1926=100	168.9	165.5	154.6	+ 2.0	+ 9.2
Farm Products	1926=100	181.7	177.5	166.0	+ 2.3	+ 9.5
Metals & Metal Products	1926=100	175.6	173.9	167.7	+ 0.9	+ 4.7
Building Materials	1926=100	220.0	212.7	189.8	+ 3.4	+15.9
Steel Billets (Pittsburgh)	net ton	$53.00	$53.00	$52.00	0	+ 1.9
Steel Scrap, heavy melting, Pitts.	ton	43.75	44.75	28.25	— 2.2	+54.8
Copper, electrolytic	lb.	.22½*	.22½	.17⅝	0	+27.8
Cotton, mid. 15/16"	lb.	.4185	.3845	.3080	+ 8.8	+35.9
Rubber (Rib-smoked sheets)	lb.	.58	.42	.17⅝	+38.1	+229.5
Wheat, No. 2	bu.	2.51⅝	2.50	2.44	+ 0.6	+ 3.1

*A dual-price situation now exists in the copper market with some offerings at $.24½

TRADE (Dept. Store Sales)



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Store Sales Index (Fed. Res.)	1935-39=100	295	296	273	— 0.3	+ 8.0
Commercial Failures (Dun & Bradstreet)	no.	145	168	148	—13.7	— 2.0
Freight Carloadings	cars	751,276	837,218	623,962	—10.2	+20.4

FINANCE

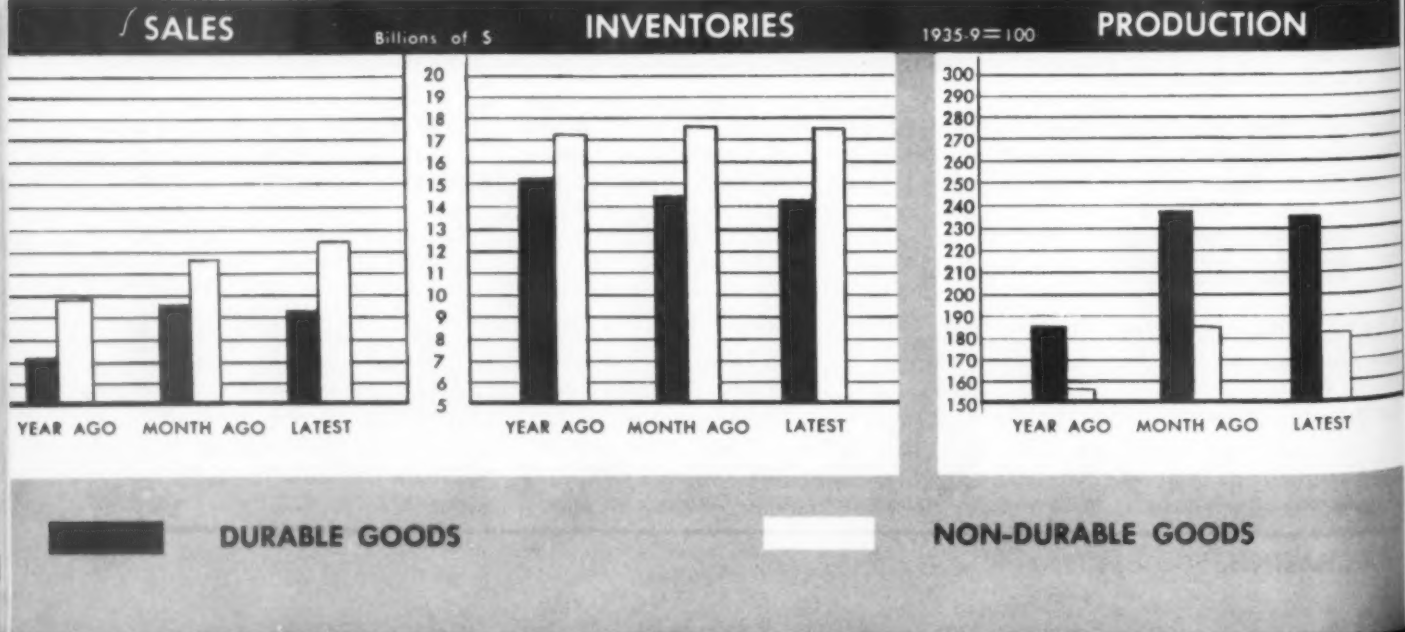
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Stock Prices (Standard & Poor's)	1926=100	152.3	146.7	124.9	+ 3.8	+21.9
Bank Clearings (New York)	mil $	8,144	7,131	7,184	+14.2	+13.3
Federal Reserve Credit	mil $	19,665	18,904	17,804	+ 4.0	+10.6
Currency in Circulation	mil $	27,151	27,015	27,454	+ 0.5	— 1.1

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

	1949		1950			
	July	August	April	May	June	July
Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)						
All Manufacturing	17,114	18,945	18,459	r20,695	21,329	21,751
Durable goods	7,207	7,982	7,956	r9,089	9,569	9,315
Iron and Steel	1,703	1,850	2,015	r2,261	2,328	2,234
Nonferrous metals	418	546	542	r648	738	742
Electrical machinery	669	749	833	r918	999	1,005
General machinery (exc. elec.)	1,063	1,130	1,219	r1,350	1,382	1,426
Motor vehicles & equipment	1,558	1,739	1,486	r1,756	1,880	1,646
Transportation equipment (exc. motor vehicles)	487	492	384	r418	400	490
Lumber and timber products	362	410	450	r529	606	557
Furniture & finished lumber products	288	336	352	r394	396	384
Stone, clay & glass products	349	395	360	r459	459	440
Nondurable goods	9,907	10,964	10,502	r11,606	11,760	12,436
Food and kindred products	2,774	2,969	3,023	r3,460	3,463	3,605
Beverages	674	740	577	r658	707	701
Tobacco products	271	298	254	285	287	300
Textile-mill products	968	1,111	1,027	r1,166	1,242	1,356
Apparel	770	995	620	r616	548	748
Leather and products	282	316	264	r293	328	349
Paper and allied products	497	583	574	r640	670	660
Printing and publishing	555	573	648	r674	664	653
Chemicals and allied products	1,106	1,239	1,221	r1,374	1,407	1,458
Petroleum and coal products	1,511	1,598	1,662	r1,716	1,763	1,866
Rubber products	271	295	303	337	367	442
Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)						
All Manufacturing	32,367	31,638	31,219	r31,509	32,014	31,834
Durable goods	15,225	14,741	14,011	r14,140	14,378	14,321
Iron and steel	3,459	3,337	3,171	r3,228	3,324	3,348
Nonferrous metals	1,115	1,064	996	r991	1,011	992
Electrical machinery	1,806	1,737	1,606	r1,660	1,698	1,679
General machinery (exc. elec.)	3,386	3,329	3,116	r3,119	3,158	3,124
Motor vehicles & equipment	1,904	1,824	1,840	r1,829	1,823	1,818
Transportation equip. (except motor vehicles)	903	860	648	r626	622	657
Lumber and timber products	617	586	619	r641	662	649
Furniture & finished lumber products	757	754	807	829	849	832
Stone, clay & glass products	548	527	506	r503	517	518
Nondurable goods	17,142	16,898	17,208	r17,369	17,636	17,513
Food and kindred products	2,842	2,884	3,194	r3,217	3,177	2,999
Beverages	1,102	1,062	1,162	r1,143	1,119	1,180
Tobacco products	1,611	1,668	1,687	r1,698	1,695	1,678
Textile-mill products	2,316	2,219	2,339	r2,466	2,608	2,601
Apparel	1,421	1,359	1,496	r1,470	1,580	1,660
Leather and products	590	598	644	r665	681	650
Paper and allied products	832	793	778	r759	749	741
Printing and publishing	580	568	617	r615	640	621
Chemicals and allied products	2,264	2,247	2,128	r2,149	2,168	2,177
Petroleum and coal products	2,546	2,513	2,204	r2,213	2,220	2,272
Rubber products	625	586	598	609	607	559
Manufacturers' New Orders (Unadjusted)						
All Manufacturing	15,496	18,697	18,594	r20,345	22,121	24,328
Durable Goods	6,195	7,407	8,531	r8,909	10,510	11,953
Non-Durable Goods	9,301	11,290	10,063	r11,436	11,611	12,376

n.a.—not available

SALES, INVENTORIES AND INDUSTRIAL PRODUCTION



Straws in the Trade Wind

● A joint survey made by the Securities Exchange Commission and the United States Department of Commerce indicates that planned capital expenditures for this year total $17,900,000,000. Estimates made at the beginning of the year had put the toal figure at $16,100,000,000. The $1,800,000,000 increase has been attributed to the expansion caused by the Korean war and the international situation generally. Government officials responsible for the survey have been reported as saying that their latest figure may even be on the conservative side. It was also stated that the increase in outlays is a substantial one, even though prices and costs have risen this year.

● National Production Authority officials have been reported as estimating that next year will see a cutback of about 400,000 in the number of single dwelling units built. At the present rate of building, the number is expected to go well over 1,000,000 units, since a total of about 839,000 had been reached by the end of July. Chief factor in the cutback, it is said, will be the new credit curbs and expected shortages of such important building materials as lumber, copper, steel, etc.



● Despite impending tightness in various industrial materials, the automobile industry is expected to produce about 6,000,000 vehicles in 1950. General Motors, at the current rate of production, will account for approximately half that number. August was the second best month in the industry's history, with nearly 30,000 passenger cars a day coming off the assembly lines.

● New government regulations have been issued in an attempt to relieve the freight car shortage. Demurrage charges have been increased sharply—if cars are not loaded or unloaded within the 48-hour free time allowed by the railroads, the shipper must pay $5 a car a day for the first two days the car is held overtime, $10 a car a day for the second two days, and $20 a car a day thereafter. Railroads must move freight cars 24 hours after they are made available for movement in a yard or warehouse area. Less-than-carload shipments within a municipal switching area are to be made by trucks, to permit cars to be released for long-haul shipments.

● First commercial scale utilization of the huge low-grade iron ore bodies of the Mesabi Range in Minnesota will be carried out jointly by the Republic Steel Corporation and Armco Steel Corporation. Each company is a half-owner in the Reserve Mining Company, which controls a large deposit of magnetic taconite ore in the range and is planning to process the ore. The initial investment in the operation will be approximately $60,000,000, with longer range developments to cost about $100,000,000. The first unit is expected to produce 2,500,000 tons of iron ore pellets annually. Later, the output would increase to about 10,000,000 tons each year.

● Shipments of steel products in the first seven months of 1950 were the highest ever made in the similar period of any year, according to American Iron and Steel Institute. The total of 40,232,505 net tons for the period in this year was slightly more than 2,000,000 tons greater than in the similar 1949 period and 2,700,000 tons greater than in the corresponding part of 1948. Shipments of cold rolled sheets made a monthly record in July at more than 803,000 tons.

● Monsanto Chemical Company will build new facilities costing approximately $30,000,000 at Texas City, Tex. for the production of acrylonitrile. Acrylonitrile is a primary ingredient in several new wool-like synthetic fibers. It is also a raw material used in plastics and buna N rubber. It will be made by Monsanto from acetylene by a new process which will also produce related chemicals.

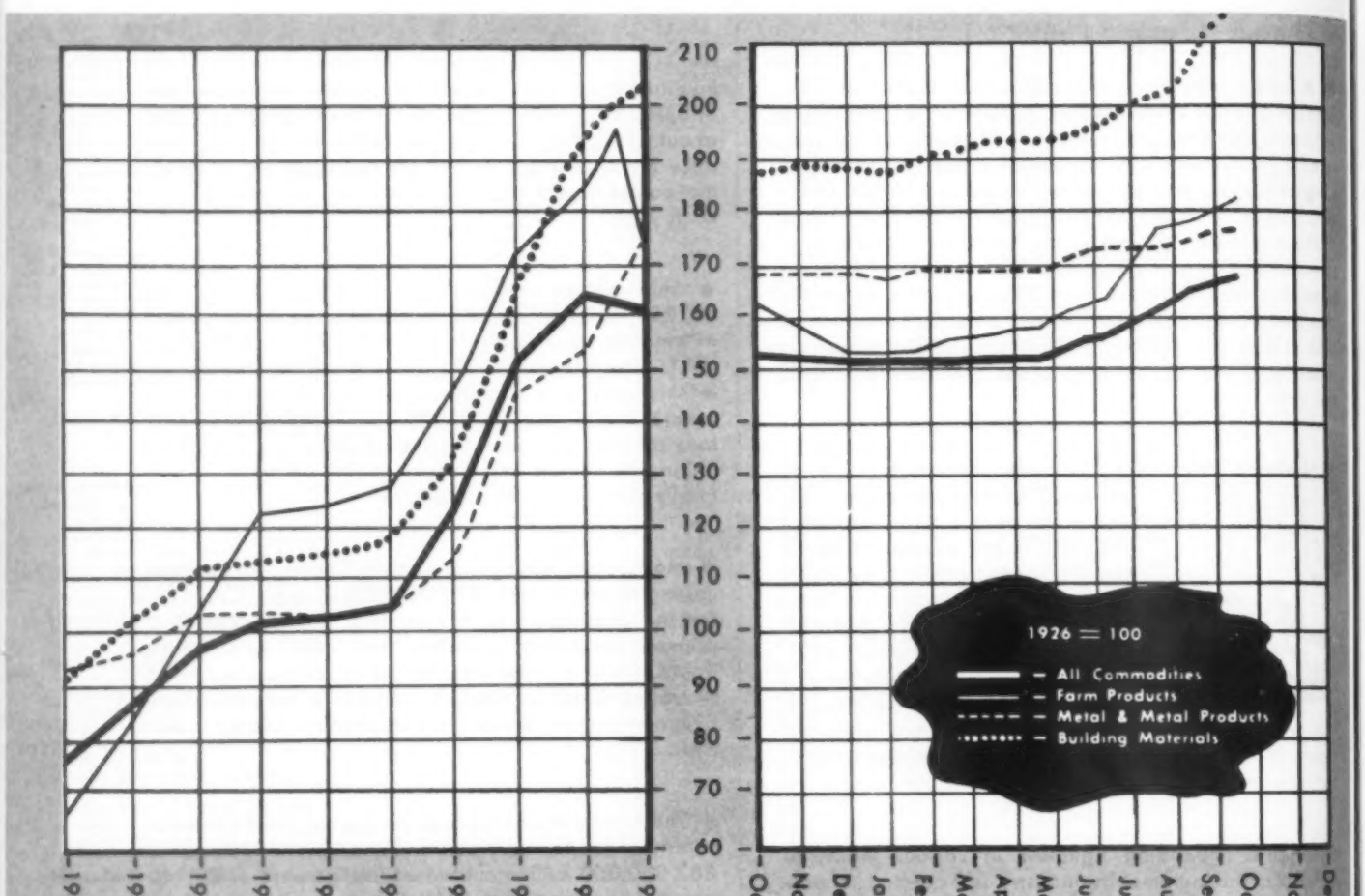
● The American Gas Association has reported that sales of natural gas during the second quarter of 1950 totaled 882,000,000 million cubic feet, an increase of 22.1% over the like quarter of 1949. For the year ending June 30, 1950, sales of natural gas amounted to 3,441,000,000 million cubic feet, a gain of 13.9% in the like period a year earlier. At the end of June, about 13,900,000 customers were being served with natural gas, an increase of 13.9% over the previous year. Meanwhile, members of the Federal Power Commission said that indications were that the Panhandle Eastern Pipeline system would fall short of meeting demands for natural gas by 70,000,000 cubic feet daily in the coming winter.



● The National Industrial Conference Board index of consumers' prices, based on surveys in ten major cities throughout the country, advanced 0.4% from July to August. The new increase brought living costs to within 1.5% of the postwar peak of July-August 1948, according to N.I.C.B.

● United States exports in July dropped to $774,100,000, as compared with $876,500,000 in June. Imports rose in the same period to $711,100,000, as compared with $685,600,000 in June. Exports in July, 1949 were $899,800,000 and imports were $456,500,000.

The Price Picture



Employment & Earnings

NON-AGRICULTURAL EMPLOYMENT

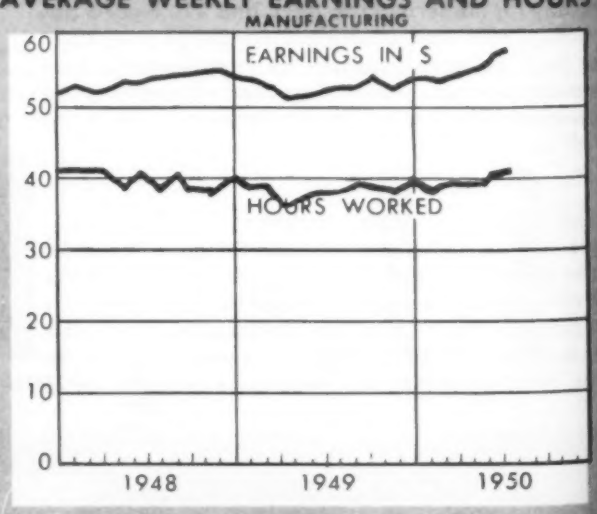
(in millions)



SOURCE: U.S. DEPT. OF LABOR

AVERAGE WEEKLY EARNINGS AND HOURS

MANUFACTURING



The Pulse of Business

The military picture in Korea has been changing rapidly and favorably during the past few weeks and may be close to a decision within a short time. The hedge, of course, is whether Russia decides to reoccupy the country up to the 38th parallel with her own troops, or send in Chinese communist troops in force. If any move is taken, the latter seems the most probable.

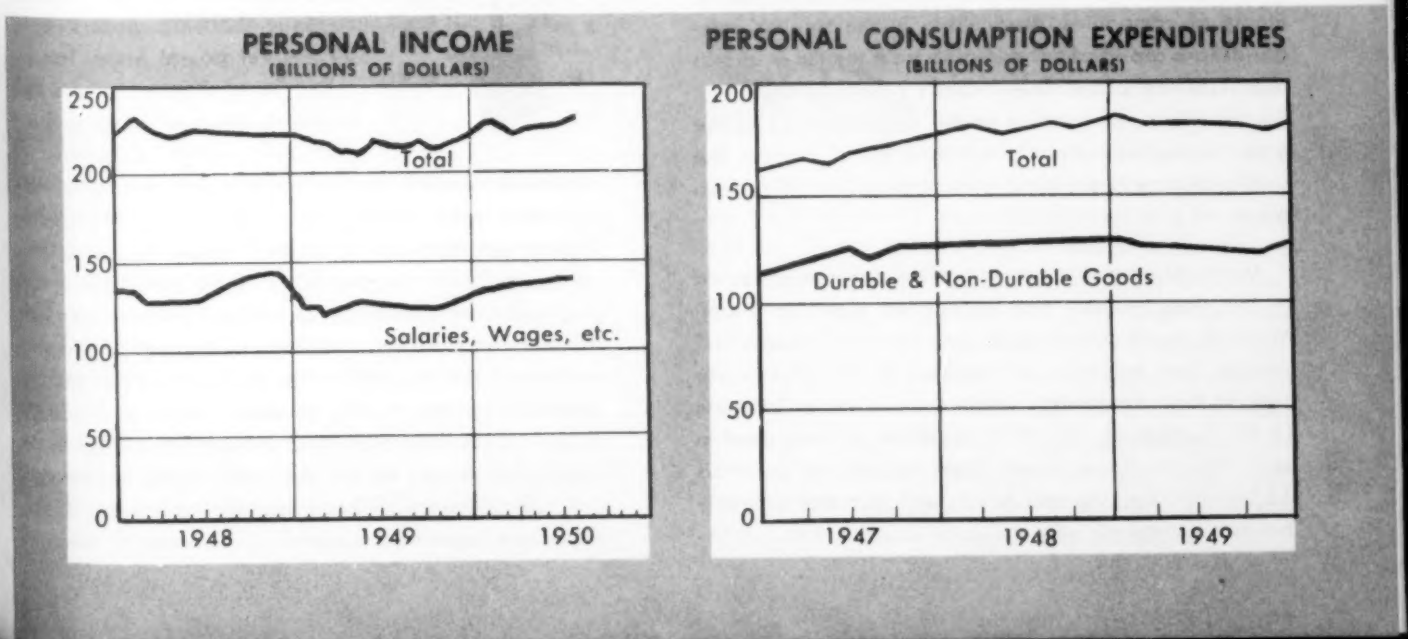
To date, few responsible observers have opined that a successful conclusion of the Korean war for the United States and the United Nations would mean an abrupt change of pace in the climbing business and industrial activity brought about by the hostilities. Which seems to indicate they feel we are at long last learning the hard and bitter lesson of preparedness from a ruthless teacher. It shapes up this way in the general view: if we win in Korea, it will simply be a matter of time before communist aggression breaks out somewhere else among the troubled spots of the world. We have to be prepared to resist this aggression with force. We must further be prepared for the outbreak of a general war in the event one of the local actions cannot be controlled. Even now there is no small amount of apprehension as the battle for Korea comes to a head over the possibility of it flaring up into a lot more than the now celebrated "police action."

In any event, the long-term outlook is one of continued high expenditures for arms and armies, not only for ourselves, but those who will have to fight first on the battlefields chosen by Moscow. And with this change in our traditional political and social life will come the inevitable change in our economic life. It is difficult to foresee them precisely, but the immediate steps being taken now to organize the economy for cold, lukewarm, and possible hot war, give a fair overall picture. Inventory controls had been announced on 32 critical items as this was written, and priorities to permit immediate meeting of military needs were expected to be announced shortly. So far, the program seemed to be meeting, generally speaking, the approval and support of business men and the public at large. It was hoped that some sort of stability was being achieved in trying to funnel the proper amounts to military purposes without disrupting to any great extent the flow of goods to civilians. From what most knew, it seemed that the job could be accomplished.

There was, however, a growing sentiment that the curtain had not been fully drawn back on all that should be known, and that it would not be until elections had passed. The ominous words "rationing" and "price controls" kept popping up but were being carefully avoided by the legislators who would be responsible for putting such highly unpopular measures into effect should they become necessary.

While the supply of materials seemed good, for the time being, the course of prices was causing some concern. The trend was consistently upward — in all lines, from raw materials to finished goods — and the pace was accelerating. Full-blown inflation was the prospect as the scramble for goods, higher prices, and higher wages grew wilder. The problem of how to control that inflation, meet our requirements and obligations, and still avoid the stultifying effect of strong, involuntary controls was growing more acute. The big ray of hope as this was written was our growing success in Korea which was reflected in declines in the commodity markets which had fluctuated wildly during the initial stages of the war. Panic buying was declining in proportion to the advance of our forces. It was widely felt that there was plenty to go around, that the country's productive capacity was great enough to take care of military demands and normal civilian requirements, and that voluntary controls could do the job. The next month or two — during which time the Russians will have to decide on a breather or another swift jab—should give the answer.

Personal Income & Expenditures



Materials & Markets

STEEL



Steel production began to move up toward record heights again during the month as the market found itself in a growing uproar. Steel production at this writing was scheduled at 100.4% of capacity, or 1,936,400 tons for the week, only 4,200 tons less than the all time high set in May of this year. Meanwhile there was a frantic demand for all types of steel, with many buyers worried that they would be unable to get enough to keep their operations up to normal. Mills were trying to dissuade purchasers from placing orders for months ahead, but with little success.

There is still some question as to what extent military needs are going to cut into civilian supplies of steel. Up to the time that things looked brighter in Korea the estimates had been growing larger and larger. What effect a possible victory in the "small war" will have is debatable, but trade circles feel that whatever the turn of events steel will be very tight for some time to come. Huge expansion programs are being set up by the industry, based on previous plans and on cooperation with the requests of the government, but they cannot be expected to help ease the shortages until some time late next year.

At any rate, steel consumers appeared to be acting on the theory that defense orders are going to take a sizeable chunk out of available supplies from now on. Another impelling motive has been the uncertainty over controls, and this may not be resolved until after elections. The new inventory control order is not expected to alter the picture considerably, inasmuch as inventories of most users are believed not to be excessive. Plenty of companies, particularly in the smaller categories, are reported to be hurting from the cut in quotas that is taking place. These quota cuts are continuing. All this has been leading to the reappearance of the gray market and rumors here and there indicate the shade of gray is developing in some places to a deep black.

Meanwhile the voluntary allocation program expected in the steel industry was still in the planning stage. Much of course, depends on just what the military will require, and not even the top men in the industry are sure of that. Benjamin F. Fairless, in a recent address to the Purchasing Agents Association of Philadelphia said that the government might require as much as 12,000,000 tons by next July 1, although that was only his own estimate.

Mr. Fairless was quick to point out that because the figure represented about one-eighth of the total steel production, it would not necessarily mean all we had to do was cut back civilian consumption by one-eighth. The greatest difficulty today, he said, lies in the field of light, flat-rolled products, and that is precisely where much of the military demand is going to fall.

Mr. Fairless also said that present and future shortages may cause a cutback in the production of automobiles, refrigerators and appliances.

While there has been no word at all from leading steel producers, speculation continues on the possible course of steel prices as the inflationary spiral grows in almost every other industry. Costs are rising for steel mills as for everybody else. In addition, new demands are in the offing from the steelworkers, with more than a possibility that strikes will be called in January if they are not met.

NON-FERROUS METALS

"Exploratory talks" between non-ferrous industry representatives and government officials have begun with a view to meeting and overcoming the supply problem. The first group to meet in Washington came from the copper industry, with others slated to follow shortly after this was written. At the time, it was expected that the first moves would be in the nature of voluntary controls. Meanwhile the following metals and minerals were put on the National Production Authority order requiring that certain materials be held to a "practicable working minimum": aluminum, columbium, cobalt, copper, magnesium, manganese, nickel, tin, tungsten, and zinc.



A dual price situation developed in the copper market during the month as one leading producer announced that it would continue booking orders at a 22½¢ per pound price. This resulted in a situation where two large producers were quoting that price while a number of smaller producers, custom smelters and one large mine producer were quoting 24½¢ a pound. One leading metals authority described the market as being in a state of "utter confusion" with at least four prices being quoted, depending on where the metal is bought. He pointed out that domestic production and imports combined are not sufficient to meet current demand, intensified by the military situation. Producers' and refiners' stocks rose slightly in August, according to the Copper Institute, but at the end of the month only 50,952 tons were on hand, less than a month's supply, based on current consumption. A year ago at the same

time stocks were almost 217,000 tons. Three leading brass mills were reported by a union leader to be planning on a reduced work week because of the difficulty in obtaining copper.

The better war news was having its effect in the commodity markets, and metals futures dropped sharply toward the end of the month. Demand still continued heavy for lead, zinc and tin, however, although there was a slight easing in the pressure on lead prices. Tin prices jumped at mid-month but fell back slightly later.

Domestic lead production declined 15% during the month of July, according to the Bureau of Mines, to the lowest monthly level since last October. The average daily rate of zinc production dropped 6% to the smallest level since last January.



Nickel continued to be in short supply, and the pinch was being felt by the steel industry, to which it is vitally important for alloying. It is understood that the government will attempt to help alleviate the shortage by spending $5,000,000 to reactivate the idle nickel facilities at Nicaro, Cuba.

The aluminum industry has sufficient operating capacity to fill promptly all military needs thus far announced and to continue to produce large amounts of the metal for civilian use, according to The Aluminum Association. The association has reported that defense officials have estimated that the military expansion program will require about 100,000 tons of aluminum during the current fiscal year, which is only about 14% of the present total output. Primary aluminum has already been placed on an allocation system, it was stated, but this was done voluntarily by the producers themselves to assure equitable distribution because of a recently increased influx of civilian orders and to a lesser extent new military orders.

RUBBER

Rubber prices in the commodity markets fell off as news of our advances in Korea was made known, but they still had a long way to go down. Since there is still some uncertainty about how events will turn out both in Korea and in Indo-China where new crises were arising as this was written, it is not expected that the rubber market will come anywhere near normality for a long time to come. Meanwhile the government was stepping up the output of synthetic rubber with an annual total of 760,000 tons expected to be set. There were continuing reports that the government would also limit the use of crude rubber drastically, perhaps to as low as 20-30% of the industry combined synthetic and natural rubber consumption.

Harvey S. Firestone, chairman of Firestone Tire & Rubber Company, called for reactivation and rehabilitation of German synthetic rubber plants to help this country meet its needs. He estimated that with the reactivation of U. S. synthetic plants total production of synthetic would be at 850,000 tons annually by the end of 1950.

FUELS

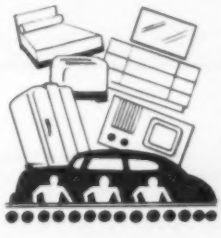
The outlook for sufficient production of both coal and oil to meet military and civilian needs, as now outlined, was reinforced during the month. There were indications however that there was increased upward pressure on prices on both fuels.

Demand for oil products has helped firm crude oil prices and caused an increase in production. It is expected that demand will hold up and that prices will be firm to higher, in spite of the stepped up production inasmuch as it increases in proportion to rising prices.

Demand for bituminous coal is on the upgrade, and prices are expected to firm and probably move higher.

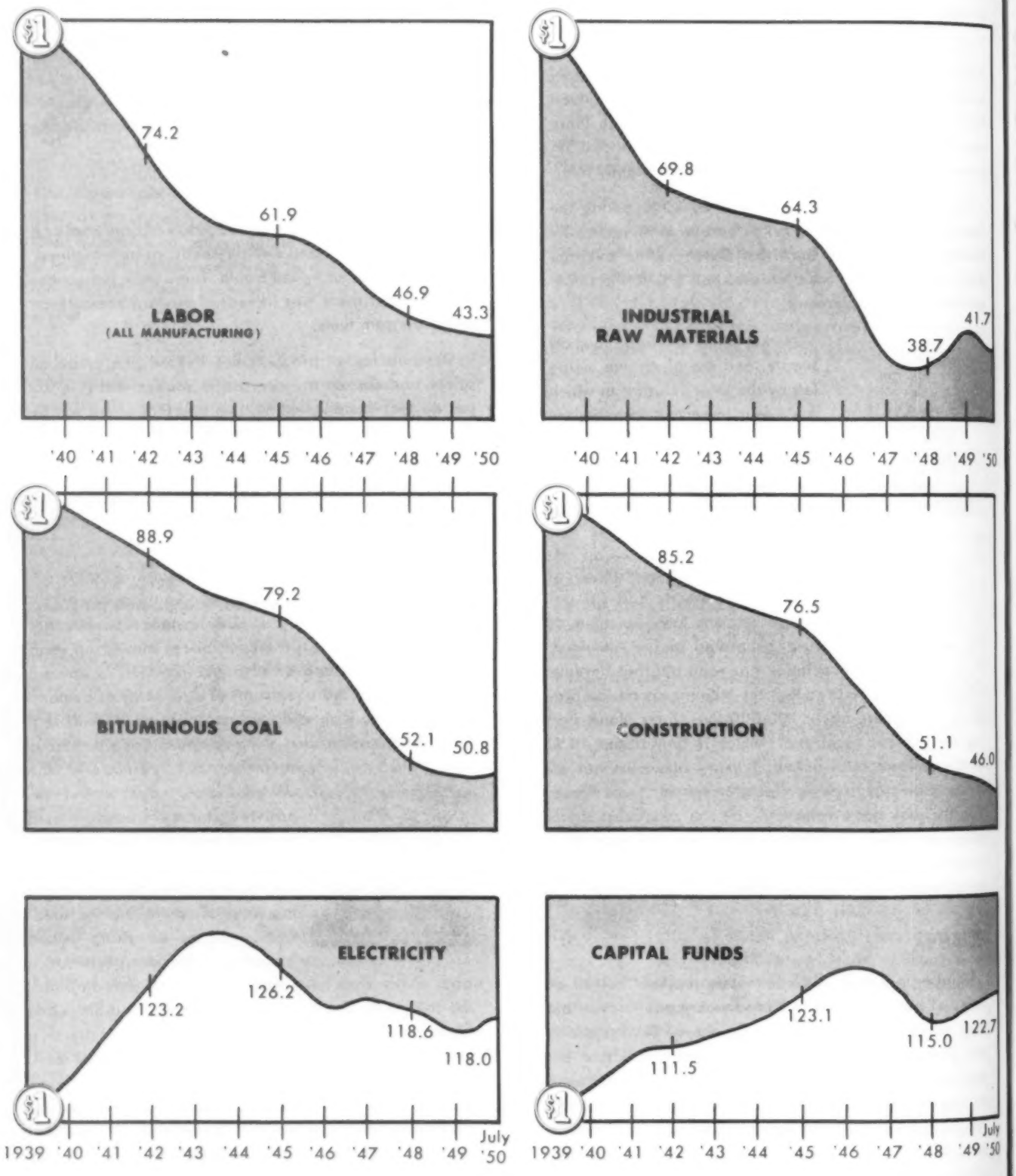
MISCELLANEOUS

Demand for paper products is high, and producers are reported as having already installed a voluntary allocation system. Kraft paper prices moved up, and the tendency among other paper products is upward . . . Wool prices were just short of a runaway as demand hit an all time high and extreme shortages threatened. Both rising civilian and military demands in numerous countries, but particularly the United States, have all but exhausted the once-large world stocks of wool. Several countries, notably U. S. and Great Britain are reported to be earnestly seeking ways of controlling the situation . . . Based on rising cotton prices and the prospects for a poor cotton crop next year, cloth prices moved up during the month and in several categories had hit yearly highs . . . The building materials market was still in a state approaching chaos, particularly at the retail level, but there were indications that there might be some improvement, barring the outbreak of a general war. Production of lumber was at a record high rate and was exceeding shipments. Although there are currently severe shortages of cement, brick, gypsum board and other building materials, the Commerce Department recently said that supplies should be easier by the end of this year because of stepped up production.



Purchasing Value of the Manufacturers' Dollar 1939-1950

1939 DOLLAR = 100 CENTS



Source: National Industrial Conference Board

Road Maps of Industry
No. 766

Higher taxes or better buying practice?

Integrated Purchasing System Is Oklahoma's Answer

By S. A. Peck

Executive Vice President
The Trundle Engineering Company
Cleveland, Ohio

Photos by courtesy of Oklahoma Planning and Resources Board.



S. A. Peck

ACCORDING to Cicero, "Men do not realize how great a revenue economy is." But Oklahomans do.

At least 20 cents of every dollar of expenditure from the Sooner State's treasury funds is disbursed through purchasing. That, in round figures, represents a volume which totaled nearly $49,000,000 last year. Cognizant of these facts, the governor and legislators of Oklahoma recently embarked upon a determined quest for the most efficient and economical means of spending this sizable sum to give their constituents more value in exchange for their hard-earned tax dollars.

The story is one that holds considerable import and interest for all taxpayers and state government officials. It's especially timely, too, in these days when most states are faced, as is Oklahoma, with dwindling revenues on the one hand, and increasing administrative and operational costs on the other. Here is a "two-way squeeze" that usually suggests greater taxation as "the only way." But Oklahoma decided to depart from the usual script. Its experience in grappling with the problem clearly points to an answer which, now proving successful, can be duplicated to a considerable degree in other states confronted with a similar situation—if their public officials are genuinely anxious and determined to solve the problem without hiking taxes.

Oklahoma found the solution lay in thoroughly overhauling and streamlining its decentralized system of state purchasing. From the rebuilding process, still under way, has emerged a simplified, basic blueprint for a well integrated, carefully unified set-up, specifically designed to enable the state to recover portions of its tax dollar formerly lost through lack of coordination and standard procedures in its purchase and supply functions. With procurement practice wrinkles now being ironed out, Oklahoma's taxpayers are beginning to wear a broader smile these days. They sense that tax increases may be avoided, thanks chiefly to the savings expected to result from modernization and simplification of the state's purchasing system.

The determination to increase available revenues by effecting economies in the disbursement of funds for acquisition of supplies, materials, equipment, services, etc., was first translated into positive action last summer. At that time the government, through Governor Roy Turner and the State Legislature, retained the Trundle Engineering Company of Cleveland, Ohio, consulting management engineers, to examine the State's purchasing system from stem to stern with an eagle eye. The object of this searching survey was to develop a more effective system of buying, accounting, and inventory procedure, together with closer integration and greater unification of purchasing functions.

The premise was that inefficiencies in state purchasing practices were costing taxpayers unnecessary hundreds of thousands of dollars. The objective was to effect corrective measures which, once put into force, would be directly reflected by tangible dollar economies. Hence, the decision to utilize the expert knowledge and broad experience of business management engineering specialists to ferret out the fundamental facts essential to the adoption of remedial steps.

No sensational probe involving instances of maladministration, graft grabbing, or political favoritism, was contemplated in this business-like study, embracing six months of intensive fact-finding and data correlation. In 99 cases out of 100, it did not indicate nor suggest individual inefficiency. Nor did it spotlight a condition peculiar to Oklahoma.

Instead, and more important, the study illuminates a shortcoming currently common to many state governments—gross lack of coordination and standardization in administrative policies and procedures. Specifically, in this case, attention was concentrated on the ab-

sence of a uniform, integrated purchasing system. The investigation, in other words, cast a new and penetrative light on the failure of government to apply to its operations the same successful principles of organization and operation which are standard in any well-run commercial enterprise.

While the study conceivably might be construed in some quarters as casting reflections on Oklahoma's government, cold logic plainly shows that exactly the opposite is true. In reality, it stands as a tribute to Oklahoma officials in that, having squarely recognized certain deficiencies common to government operation due to its very nature, they decided unflinchingly to take steps to correct them without further delay.

Government Organization Disjointed

In setting forth the general problem, the survey shows that the state government, like Topsy, had "just growed" until the structural framework became both complex and decentralized. It is a government encompassing more than 100 quasi-independent boards and commissions, departments and agencies. Each unit had its own varying quota of administrative authority, and each exercised its statutory prerogatives with a minimum regard for integrated channels of control.

Regardless of its merits in preserving democratic principles and preventing authoritarianism, this system unfortunately has brought about division of responsibility and loose definition of authority to an increasing degree. Applicable statutes are imperfectly drawn, conflicting provisions are written in without repeal of former directives, and definition of pertinent phrases is seldom provided to clearly indicate legislative intent. Under these conditions, it is small wonder that the conscientious executive has been left somewhat bewildered concerning the extent of his authority or the limitations of his prescribed duties. In those places where the purchasing function was found to be poorly handled, the failure was discovered most frequently to trace back to contradictory statutory provisions.

125 administrative agencies are involved in handling the business of state government in Oklahoma. The Board of Public Affairs, the oldest and possibly the most important administrative agency in the state

What the Management Engineers Found in State Purchasing Practice

PLUS

A steadily increasing return on investment in institutional farm property due to enlightened planning and supervision.

Satisfactory field auditing of institutional accounts.

Full observance of statutory requirements as to public bidding and letting of contracts.

Requisitioning, while not uniformly conducted by all agencies, is generally done in conformity with good business practice.

Previous abuse of "Authority" orders appears to have been corrected by adoption of "Authorization for Specific Purpose."

Collection of discounts against payment of claims, handicapped heretofore by too lengthy and complicated accounting requirements, has been expedited by a recently installed simplified procedure, which should develop appreciable savings accordingly.

Contractual specifications for major additions and improvements are of a high order. Specifications covering volume contracts appear adequate, although inclined to brevity.

Educational institutions and the Highway Department have coordinated receiving and inspection functions with the purchasing operation, and maintain adequate inventories of material requirements.

MINUS

Directives and enabling statutes pertaining to purchase and supply as ambiguous as to intent and contradictory as to interpretation, thus increasing the difficulty of proper administration.

Contracting for capital improvements is generally handled above the purchasing department level. In nearly all instances purchasing responsibility is limited to acquisition of expendable materials and supplies.

Purchasing agents' authority to buy varies from $200 to no limitation. With one exception, purchasing agents have no authority to question the necessity for purchases.

Regulations to protect the State's interest against non-fulfillment of contracts leave too wide latitude to each purchasing agent's enforcement.

Pool buying, either under volume or term contracts, is practically non-existent, being confined to two items at the present time.

No standardization between agencies as to description of requisitioned items. Application of standardization principles has been hardly recognized.

Recent legislation has authorized organization of a Standardization Committee, but as constituted it appears to be simply an advisory group, without authority and power to enforce its accepted recommendations.

Wide variations in bookkeeping practice make any centralized control of supply cost almost impossible to attain.

Cost of placing a purchase order varied from $2.22 to $15.00 between enumerated purchasing offices.

No centralized control to guarantee that the State receives what it pays for, either in quality or quantity. In general, inspection covers only quantity of shipment with no check as to quality against the specifications of the originating requisition or purchase order.

Conditions as to stock storage and issue vary widely, being left to local administration and differing in effectiveness accordingly.



State Capitol Building at Oklahoma City, pictorial proof of the statement in the survey report: "Operation of this division appears to be very well conducted, and the appearance of State property is particularly impressive.

organizational structure, does the purchasing for only 75 of these; the rest do their buying independent of control from any central authority. The Board has full fiscal responsibility for only 16 of the 75, comprising penal and eleemosynary institutions. The other 59 are state boards, commissions, departments, or officers, also three small colleges, which are served by purchasing only.

The power to requisition includes the authority to decide when and what expenditure will be made. This authority is vested solely in the administration of the agency involved. The duty of making the purchase includes only the right to decide *how*, and in some cases *where*, the item will be secured. Thus the Board may exercise discretion as to approval of requisitions in the case of the 16 institutions over which it has direct administrative control; it has no such authority over procurement requests of the other agencies.

The over-all function of purchasing and supply is performed at four other organized points, in addition to the Board of Public Affairs, for 21 institutions and 54 agencies. They are: Oklahoma A. & M. College, for self and three extension divisions; University of Oklahoma; University Hospital and Medical School; and Department of Highways.

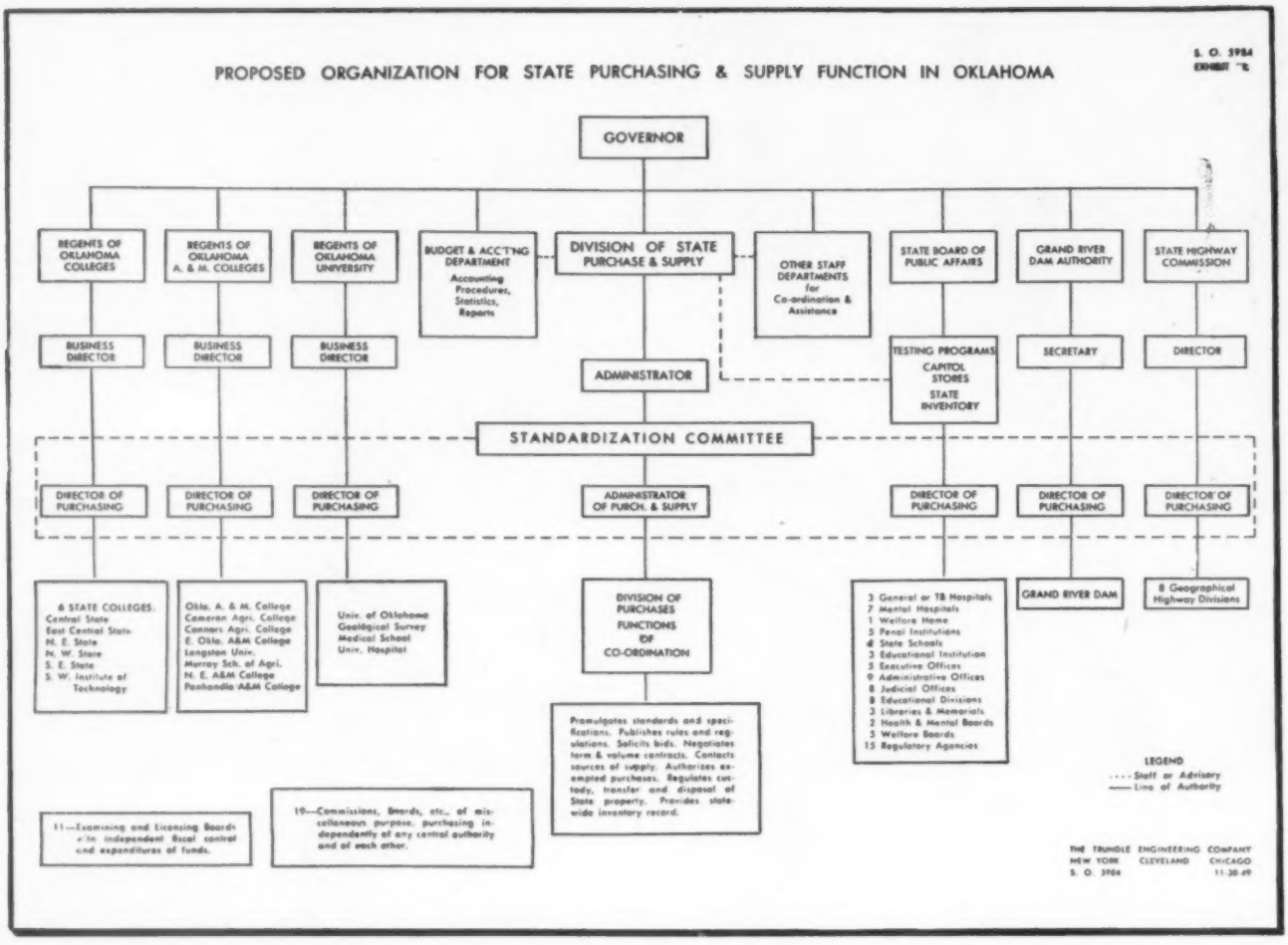
Combined, these five well organized and well operated channels spent nearly $43,000,000 in the 1949 fiscal year—88% of the total amount expended by the State through purchasing. The other $5,750,000, or 12%, was spent by 43 different agencies, each one independent of the others.

In this connection, it should be noted that purchasing performance of three agencies—the University, the A. & M. College, and the Highway Department—drew a big bouquet in the study and report, as presenting "meritorious details of operation that can well be embodied in any state-wide system." These units, the report further recommends, should continue their independent ways in purchasing, but all other functions should be governed by a uniform system of operation.

Specific corrective measures, 36 recommendations in all, have been "packaged" by Trundle in a detailed plan designed expressly to spur coordination and standardization of state purchasing on an overall basis. By this plan, all purchasing will be

Central State Hospital at Norman, one of the 21 institutions and 54 agencies for which the State Board of Public Affairs does the purchasing.





placed under the direction of an Administrator of Purchases who, reporting directly to the Governor, would be assisted by a Standardization Committee composed of purchasing agents of the major agencies.

The recommendations specifically call for such purchasing practice revisions and amendments as definition and regulation of issuing requisitions by smaller agencies doing their own purchasing; encouragement of institution-made products to decrease inmate care cost and to enhance morale and welfare; and unification of inventory practice to provide, at the end of each fiscal year, an accurate financial statement of value, disposal, and enhancement of assets.

Savings through Buying

Emphasis also is placed on the savings possible through pool buying, which should be "extended to all state agencies and to those subdivisions that may wish to benefit by such a cooperative program." In North Carolina, for example, pool buying of gasoline netted a saving of $350,000 in 1948, the report points out.

The report has this to say about standards: "Standardization implies the use of the same type, brand, class, or grade of commodity at all institutions. Laundry and hand soaps, cleaning compounds, brooms, floor wax, dairy and poultry feeds, seeds, etc., are mentioned as possible items that could be standardized for all agencies. Only by standardization of commonly used articles can the full benefits of pool buying be realized. To develop a standard item, it is necessary to find one with specifications or characteristics which will satisfy the requirements of nearly every using agency. While it is recognized that the scope of standardization is limited somewhat by the variation in conditions prevailing at the various points of usage, there is still a wide area in which standardization can be satisfactorily applied to the advantage of economical buying."

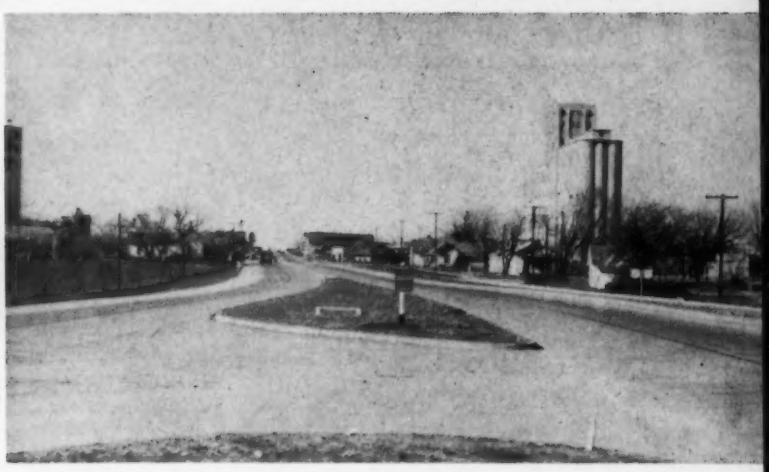
Still other means are cited for effecting purchasing improvements and economies. One is the creation of a capitol storeroom for routine items used in every stenographic or file office—a project that will greatly decrease the cost of acquiring these supplies, both because of lower unit prices and reduced administrative cost to handle the transaction. Again, centralized supervision of public printing, reinforcement of the purchasing division with additional trained buyers, standardization of practice relative to maintenance of bidders' lists, and preparation of standard specifications to guide acquisition of supplies and equipment, are strongly urged.

Advantageous Results

Purchasing advantages resulting from the proposed reorganization and integrated operation are listed as follows:

1. Concentration of purchasing power, allowing purchases in large quantities.
2. A more competent check on quality of delivered goods.
3. Better prices under widely competitive bidding.
4. Standardization of specifications, eliminating unduly expensive or poorly adapted grades.





Dormitories at Oklahoma A. & M. College, Stillwater, and a section of state highway near Yukon. Purchasing practice in these agencies is highly commended in the Trundle report, cited as a model for other administrative units.

5. Maintenance of minimum quantity stocks, and transfer of surplus to meet shortages elsewhere.

6. Long-range buying program to take advantage of seasonal variations.

7. Curtailment of hand-to-mouth buying and "emergency" selection caused by poorly anticipated needs.

8. Development of expert buyers familiar with markets, manufacturing and trade practices, packaging and shipping conditions.

9. Utilization of testing and inspection facilities with competent personnel, on full-time basis.

10. Concentration of requisitions from multiple agencies, permitting objective order solicitation on part of vendors with lower selling cost to them.

11. Assurance of adequacy of supply on hand, with minimizing of obsolete or shopworn stock, providing the Board of Affairs maintains stockrooms and perpetual inventory control.

To put the recommendations into effect so far as possible within the existing legal structure, the Oklahoma state government has retained D. L. Harris, Trundle Engineering representative who helped make the study, to serve as Administrator of the Division of State Purchase and Supply. Many of the conditions uncovered are already under correction, according to Harris, who predicts that within a year 94% of all state purchasing will be funneled on a uniform basis without recourse to remedial legislation.

Full effectiveness of the new setup and protection of purchasing policy, however, will require certain corrective legislation. The division will provide these recommendations before the next legislature convenes in 1951.

Compiled at a cost of approximately $33,000, the Trundle purchase and supply study represents a sound and profitable investment by the state. In effect, it serves as Oklahoma's answer to the problem of getting more "mileage" from its tax dollars despite lower revenues and rising costs.

Significance of this Experience

A direct saving in state purchasing practice, in itself, by no means represents spectacular economy in these days of astronomical and still soaring government budgets. Yet it has a signal significance, for Oklahoma's experience suggests the possibility that many similar opportunities exist throughout the widespread functions of government, presenting "new frontiers" in saving tax dollars, that await intensive exploration by cost-conscious public officials of other states.

The operation of State Parks, like Quartz Mountain and Robbers Cave, is responsible for a part of Oklahoma's annual purchase budget of $49,000,000.





Fast, low cost method of metals fabrication

Get Acquainted with Stud Welding



Six ½" studs are end welded around the perimeter of this petroleum vent valve by the Nelson hand operated gun. Simple templates were used to assure proper location of the studs. Templates constructed of either sheet metal or Masonite can produce location accuracies of 1/32". On this job the template also serves to properly locate the rider upon which the diaphragm rides.

AMONG the effective weapons for warring on high production costs in the fabrication of ferrous or non-ferrous metal products, is the Nelson stud welding gun. Stud welding is a means for the low cost application of fasteners for parts that must be bolted or riveted or hung in place. Basically, it is an electric arc welding method for end-welding fastener studs to steel surfaces. In many respects stud welding is similar to manual arc welding. It permits the welding of studs in any position from one side of the work.

Machinery and equipment manufacturers have found it to be an important cost production technique, for it eliminates drilling or tapping and cuts production time. Studs or fasteners are welded in place with accuracy and permanency in less time than it takes to say 'stud welding'. Furthermore, studs ¼" in diameter can be safely welded to sheets as thin as .048", thus doing away with the need to use flanges or bosses often necessary to give support to other types of fasteners.

Many companies are profitably utilizing stud welding equipment for repair and maintenance work. In the construction industry it has proved invaluable for speedy, low-cost installation of parts and fixtures from basement to ridgepole—lighting fixtures, plumbing outlets, conduit, window frames, roofing, and siding.

The equipment consists of a d-c welding generator, a timer control to regulate the arc-producing current, the gun, studs, and a protective ceramic ferrule for the studs—one being used with each stud. The gun weighs only five pounds. It may be used as a portable tool or a rigidly mounted tool.

In operation, a stud is loaded or set in the gun chuck and a ferrule positioned over the stud. The operator positions the gun, pulls the trigger and the stud is welded in place. Operation is just that simple, the arc being drawn between the stud and the work part, creating enough heat to melt the metal, and at the right instant the stud automatically is plunged into the metal under pressure provided by the main spring of the gun. No shielding is necessary as in the inert-gas

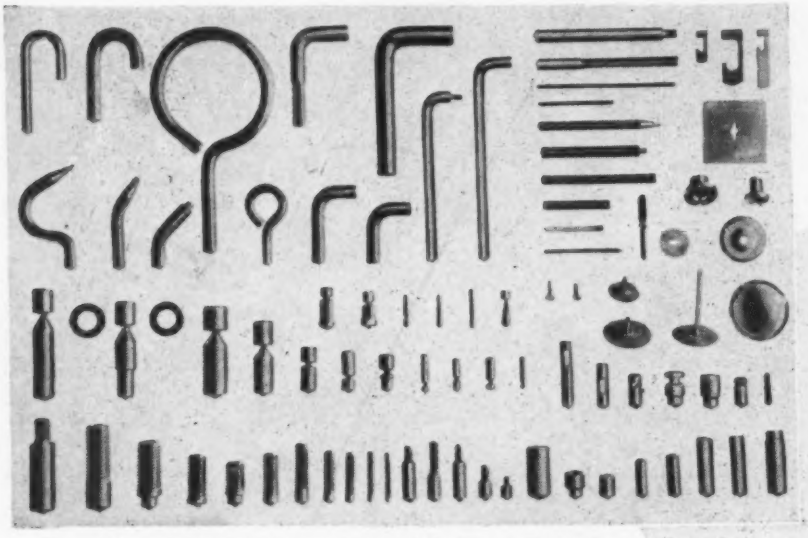


The Nelson stud welding gun weighs but five pounds. Here an operator is placing stud and ceramic ferrule in the gun. The next step is to locate the stud on the job, the simplest method being to locate stud by center punch mark. This method is useful for such applications as installing electrical conduit or joining two pieces of metal where extreme accuracy is not necessary. The next step is to pull the trigger and the job is done. The ceramic ferrule serves to confine the arc and secure uniform weld.



Standard single gun production units with all controls enclosed below the work table are now available. These units contain electrical and hydraulic circuits which make the operation nearly automatic. Once the piece is located in the fixture and the stud inserted in the chuck of the gun, the operator merely pushes the start button and the weld is automatically completed. Here a two-gun production unit is used to end weld threaded studs to base plates of a garden trimmer.

Illustrations by courtesy of the Nelson Stud Welding Division, Morton Gregory Corporation, Lorain, Ohio.



Threaded studs, hooks, pins, and special fasteners illustrated are typical of the variety of fasteners which can be end welded. Studs as long as 36" and as large as one inch in diameter with weld base reduced to ¾" are fastened by the Nelson method. If one end of a stud can be chucked in a gun and filled with flux at the other, it can be end welded regardless of its shape.



shielded arc process, though some shielding is provided by the ceramic ferrule surrounding the stud.

The studs, which may be threaded, plain, hooked or pin shaped, are available in a variety of diameters and lengths. All-position studs carry a suitable quantity of welding flux in sealed-in recess, or affixed to the welding end.

The same restrictions involved in welding ferrous metals which apply to metal arc welding also apply to stud welding. Stainless steel studs are readily welded to stainless steel or to mild steel. Low carbon steels may be satisfactorily stud welded, though preheating may be required to assure maximum toughness. Stud welding has also proved practical for non-ferrous metals fabrication.



This close-up view shows composite aluminum Rivweld stud used in the installation of roofing and siding at industrial plant. The stud has a steel welding base and an aluminum rivet extension. This extension is drawn through the sheet being applied with a hard rubber-headed hammer, after which an aluminum burr is applied and the fastening completed with a rivet set.

Many companies have found the stud welding equipment serves as a valuable and versatile maintenance tool. The gun can be used to secure lighting fixtures for both fluorescent and incandescent lights, for fastening electrical conduit, and for many other plant repair jobs.

He goes shopping for the folks abroad

Personal Goods Purchaser

By David Markstein

This is the story of an enterprising purchasing agent who is building a profitable business and giving valuable service as the personal buying representative in U. S. markets for people and firms in Latin America. From its inception in the conventional export trade, his idea is growing fast.

AN American tourist was talking to one of the embassy staff at a reception given by the American Embassy in Managua, Nicaragua.

"Trouble with being in these parts too long," the tourist said, twirling the stem of his martini glass, "is that you can't get American goods when you want them, and if you do find a store that sells U.S.-made shirts, the chances are that there will be no selection and the prices will be three times too high. What do you guys do, anyway? Go native?"

"We don't make out so badly," answered the State Department man. "As a matter of fact, we get pretty much anything we want—and I do mean anything. There's a man in New Orleans who will make personal purchases and ship down here to us at the regular retail prices. He'll 'shop' too—tell him you want a blue Arrow shirt with a white stripe, size 15-34, and within a week the shirt will be delivered by plane."

The "man in New Orleans" is Ray Ames, owner of the Impex (from import-export) Service Agency. In addition to being a regular commercial purchaser for firms in Latin America, he carries on an extensive personal shopping service. It is not entirely a service, nor a hobby. The personal purchasing pays. Since opening the Impex Service Agency last February, Ames has found that there is a big demand for such States-side shopping.

Americans working in Central America want things that they can't obtain in local stores, or that cost too much there. So they write to Ames, and he shops for them. Purchases go on the Pan-American and TACA planes the same day Ames gets an order. These aren't his only customers; the word has been spread around. Today, he and his assistants do as much shopping for Latins as they do for transplanted Americans.

The idea was born while Ames, as export manager of Reid Shipping Company, received numerous requests for personal shopping favors—everyday American merchandise—things like shoes, baby clothes, bicycles. He quit the Reid Company to start Impex. In the beginning he wrote all the letters, wangled over prices, and ran the errands himself. Today, Impex has five busy employees. In June, Impex bought out Reid.

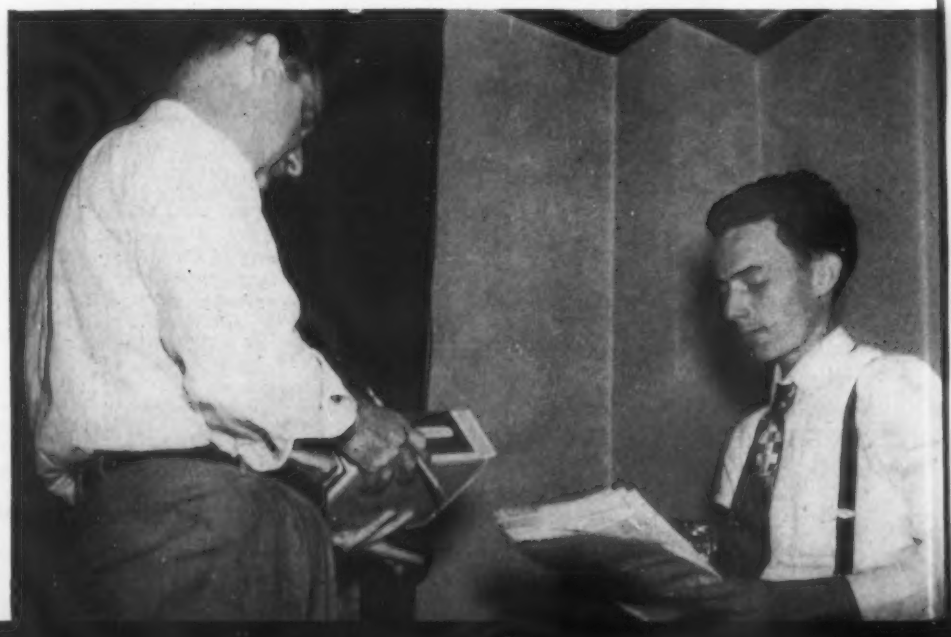
Ames didn't have a lot of money for promotional purposes. "I mailed letters to a flock of Embassy people and other Americans I knew. Lots of them began to order. Then they told their Central American friends; the word got around fast. We have about a hundred customers today."

Some of the requests are for common items like paper napkins, but others are out of the ordinary. A Guatamalan recently wrote for a portable baler to bind up his household effects for shipment to a new home. Ames had to scratch around for two days to find one, but it was delivered in Guatamala less than a week after the customer had ordered it.

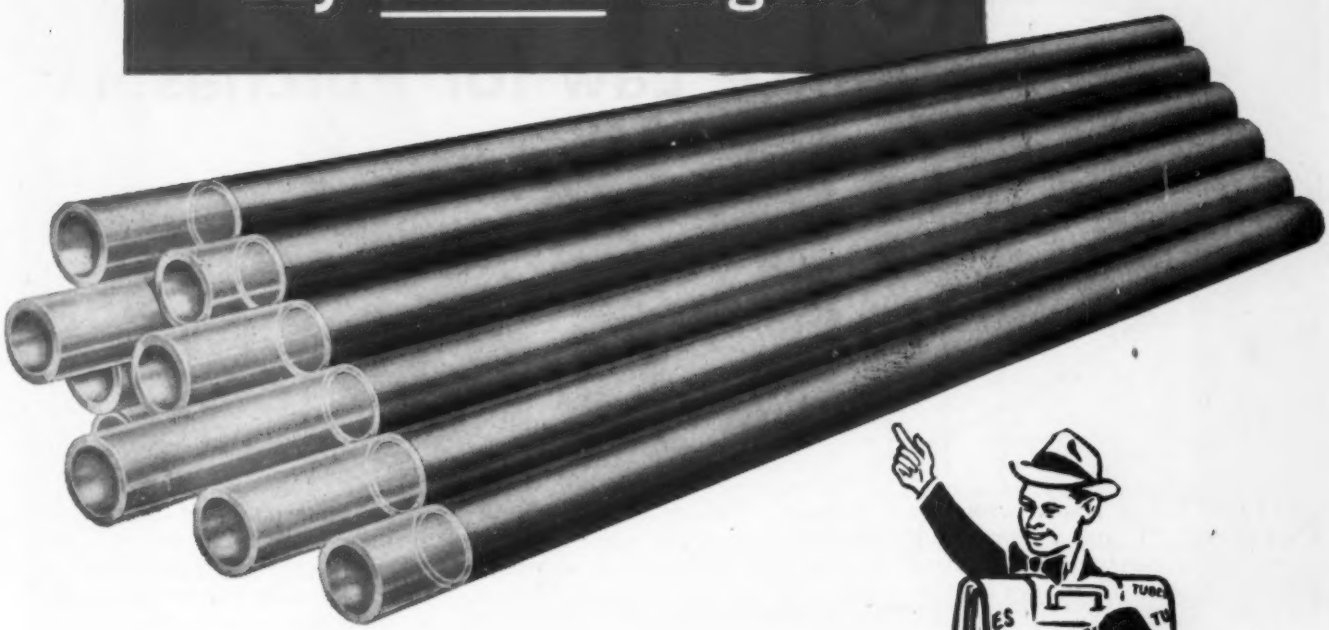
American office appliances are in brisk demand. Impex has filled orders from desks and filing systems down to a dozen pencils. It has also shopped for soap, livestock,

(*Please turn to page* 328)

Ames (left) sees that merchandise is carefully checked against the order to insure complete satisfaction. He has been entrusted with the selection of dress materials. His most unusual purchase—a registered bull.



. . . might pay you to buy random lengths





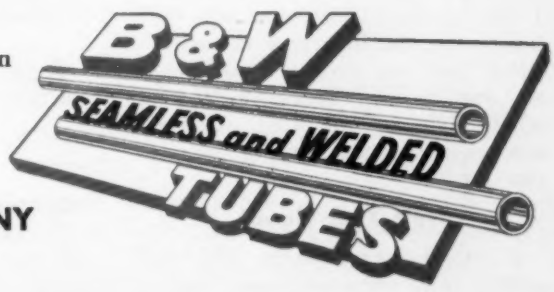
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How good is your protection?

Insurance Law for Purchasers

By Leo T. Parker

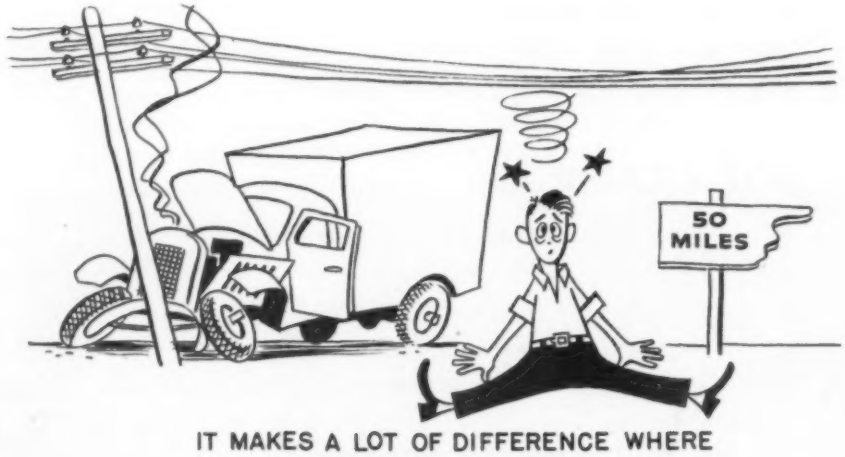
RECENTLY a reader wrote, as follows: "I am a purchasing agent for a corporation and have followed your legal writings in PURCHASING many years, but don't remember reading any article on purchaser's insurance laws. Here is our present legal problem: Our company has liability, burglary, theft, property, storm, fire, collision, indemnity and various other insurance. Recently one of our motor trucks was involved in an accident when hauling merchandise 75 miles from our main office. The insurance company has refused to pay our loss and cited a clause in our insurance policy which states that the policy insures our trucks while being operated within a radius of 50 miles of our main office and plant. We contend that the insurance company is liable because at the time we signed the application for insurance I personally instructed the insurance agent that we wanted *unlimited* protection and he promised that we would receive an insurance policy which gave us unlimited protection. I can produce witnesses who will testify that the insurance company's agent said our policy would cover all our motor trucks no matter where they are operated. Can we compel the insurance company to pay our loss?"

He's Your Agent

First, it is important and well settled law, with which all higher courts agree, that an ordinary insurance agent is agent of the insured, *not* an agent of the insurance company. This is so although the insurance company pays its agent a salary or commissions on premiums you pay the company. Hence, the insurance company is *not* at all liable for promises of protection made by the ordinary or special insurance agent. All purchasers should remember this: Irrespective of what your insurance agent tells you and no matter what protection you *believe* your insurance policy affords, you must rely exclusively upon the protection defined by the clauses in the policy. See West v. Employers Casualty Company, 178 S. W. (2d) 168.

Before entering into a discussion of legal pitfalls purchasers should avoid, I shall explain the cause and outcome of a recently decided higher court case which involves practically the same points of law relating to the above legal question submitted by a reader. Then I shall explain interesting insurance law likely to prepare purchasers and other readers to avoid legal controversy over insurance policies, and, incidentally assist them to win unavoidable law suits.

For example, in Wallace v. Virginia Company, Inc., 55 S. E. (2d) 259, it was shown that a company held an insurance policy that insured all its motor trucks "when operated within a radius of 500 miles of the place where the trucks are principally garaged".

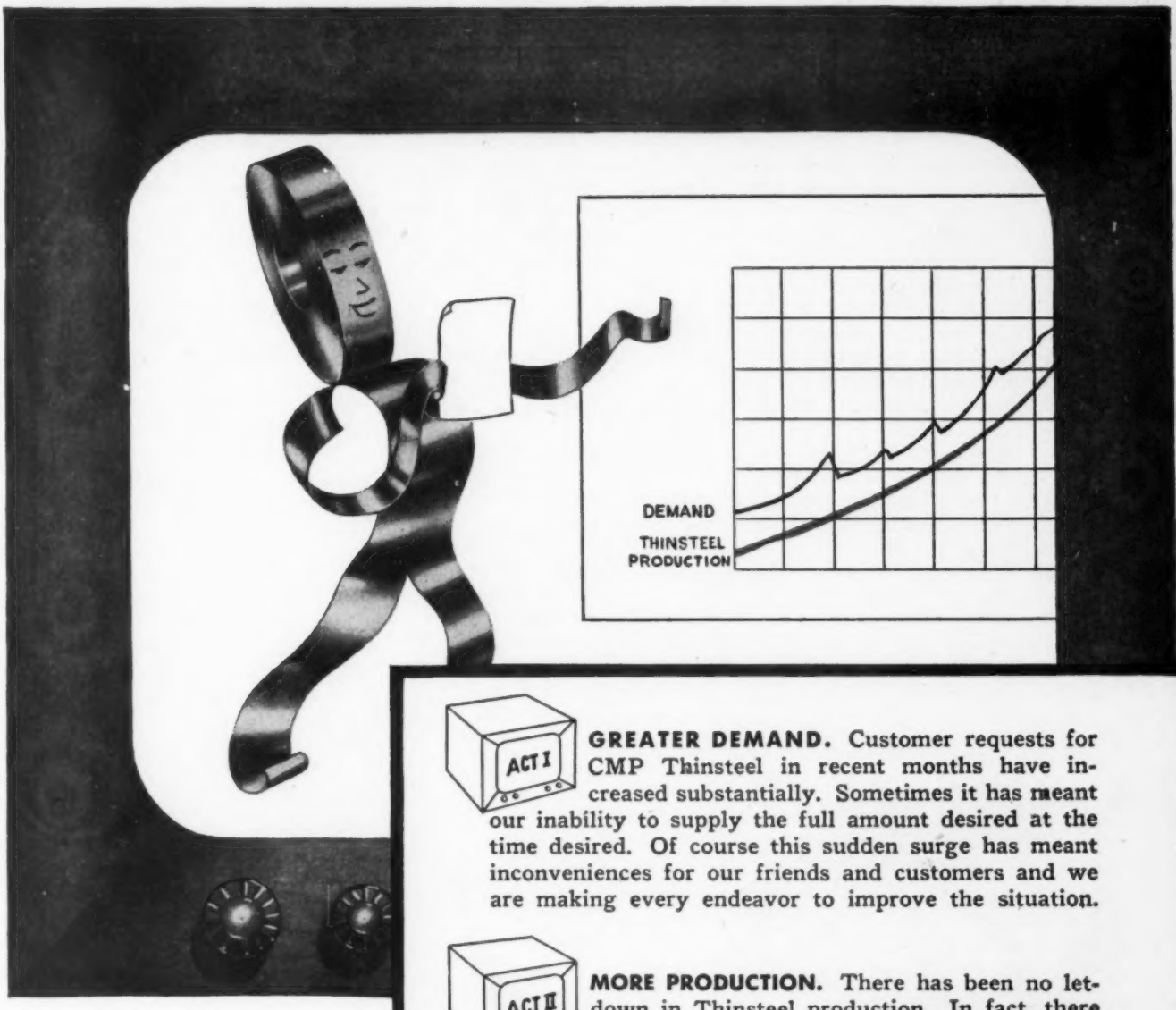


IT MAKES A LOT OF DIFFERENCE WHERE THE ACCIDENT OCCURS

One truck was driven a distance of 700 miles from the garage, where it was involved in a collision.

In subsequent litigation the higher court decided that the truck own-

a current view on THINSTEEL



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er could not recover the loss from the insurance company saying:

"The liability of the insurance company under the policy was at an end when the plaintiff sent his truck beyond the 500 mile radius, thus increasing the hazard and risks that the truck was subject to."

Read Your Policy

There are a variety of insurance policies which purchasers may carry for protection. These policies include collision, liability, property, indemnity, theft, etc., on motor vehicles. Also, insurance companies furnish policies for insurance against fire, tornado, hail, flood, unemployment compensation. workmen's compensation, medical, accident, liability, bomb, burglary, theft, etc. etc.

Numerous purchasers hold insurance policies which do not actually afford protection against losses *believed* to be specified in the policies. If a loss occurs, the holder cannot collect insurance, but quite obviously if no loss arises the policy holder may continue to pay insurance premiums many years *without knowing* that the policy does not afford the desired protection. Motto: Take time to read your insurance policies and do not rely upon promises made by your special or ordinary insurance agent.



BE SURE THAT THE PROPERTY TO BE PROTECTED IS ACCURATELY DESCRIBED IN THE POLICY

For illustration, in State Corporation v. Travelers Indemnity Company, 30 S. E. (2d) 377, it was shown that an insured requested an insurance agent to issue a policy covering robbery insurance on the outside and on the inside, and also burglary insurance. The insurance agent notified the insured *by letter* that the policy included this complete and desired coverage. However, the policy did *not* include the desired coverage, but the insured kept the policy believing that it gave protection promised by the insurance agent. When a loss resulted from burglary the insurance company refused payment, and the policy holder filed suit.

The higher court refused to hold the insurance company liable and said that when an applicant for insurance receives a policy which does not conform to representations made by the company's agent he *must notify* the insurance company of the error within a reasonable time.

In other words, retention of the policy by the insured without objection is regarded by the higher courts as an *acceptance* of the policy with the protection limited by wording of the policy.

Policy May Not Protect

There are many reasons why *your* insurance policy may be void and have absolutely *no* value to protect you against losses.

A review of recent higher court law suits discloses that an insurance policy is void (1) if the insured secured the policy through erroneous, untruthful, fraudulent or deceitful statements made in the application; or, (2) if the loss resulted from gross negligence or unlawful acts of the insured or his employee; or (3) if the testimony proves that the insured or his employee violated any clause or term of the insurance policy; or, (4) if the insured was performing an unlawful act when the damage occurred.

Hence, it is quite apparent that numerous situations may arise under which, although a purchaser may have paid insurance premiums on insurance policies for many years, yet no adequate protection is provided by the policy. It is well, therefore, that readers know the law relative on insurance, as reported in new higher court decisions, and conduct the business in view of avoiding liability whether or not insurance policies are intended to give desired and necessary protection.

Validity of Policies

It is well established law that no insurance policy may be depended upon with certainty to afford the expected or desired protection. In order to impress upon readers the truth of this statement, I shall briefly review several late and leading higher court decisions for complete verification.

See Niagara v. Lowell, 56 N. E. (2d) 28. Here the higher court held that an insurance company was justified in refusing to pay liability insurance because the testimony showed that the vehicle driver *failed to obey a state safety regulation* which resulted in the accident.

In Jackson v. State, 23 So. (2d) 765, it was shown that a "liability" insurance policy contained a clause that required the insured to notify the insurance company of occurrence of an accident "as soon as practicable". The insured delayed, after occurrence of the accident, in notifying the insurance company. The higher court held this delay invalidated the insurance policy.

In St. Paul Fire & Marine Insurance Company v. Staten, 26 So. (2d) 538, the higher court held that no insurance can be collected on an insurance policy if any party *not named in the policy* is sole or part owner of insured property or merchandise.

In Metropolitan, 174 Pac. (2d) 961, the higher court held that an insurance policy is a written contract and that it must be construed *as all other contracts.*

In Stratton, 25 N. W. (2d) 239, the higher court held that under no circumstances may a court vary the written terms of an insurance policy, or otherwise favor the insured.

In Phoenix, 175 Pac. (2d) 5, the higher court held that if an applicant for insurance makes any untrue statement in his application for insurance, although he pays insurance premiums regularly for many years afterward, the insurance policy is void and the insurance company need not pay a claim.

In Evans, 174 Pac. (2d) 961, the higher court held that where the testimony shows that the loss resulted from a deliberate act on the part of the insured, the policy is voided.

In Smith, 197 S. W. (2d) 233, the higher court held that the holder of an insurance policy is obligated to

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read *both large and small print* in the policy. This court refused to excuse an insured from failure to carefully read the whole insurance policy and know exactly what and what not the insurance company contracted to do.

See Jarvis, 40 S. E. (2d) 308. This court held that an insurance policy is rendered void by *ither* intentional or unintentional false or incorrect statements in an application for an insurance policy.

In Brown v. Jones, 4 Fed. Cas. 404, the higher court held that failure of an insured to carefully read his insurance policy does *not* excuse him, nor result in the insurance company being obligated beyond the actual words used in the policy, although an ordinary agent of the company verbally promised broad protection.

In France v. Citizens Casualty Company, 79 N. E. (2d) 28, it was shown that a purchaser held a liability insurance policy. He traded the merchandise for other merchandise and failed to have the insurance company issue an indorsement to the policy to this effect. In subsequent suit the higher court held the insurance company not liable for a loss saying:



YOUR INSURANCE IS NOT IN FORCE IF PREMIUMS ARE IN ARREARS

"At the time of the accident, the coverage . . . was not retransferred."

Other higher courts have held that if any part of identifying numbers or symbols of insured property or merchandise is incorrectly copied or written in the policy, the insured may pay premiums to the insurance company for many years but cannot collect on the policy in event a loss occurs. In other words, an insurance company is not expected by law to insure incorrectly described property or merchandise.

For example, in one case (White, 80 N. E. (2d) 20) it was shown that the motor number of an automobile fire, theft, liability and property insurance policy was incorrectly written X 179,285, when the correct number was X 179,385. In subsequent litigation, the higher court refused to hold the insurance company liable for a loss.

Property Incorrectly Described

Also, see Pilgrim Laundry v. Federal Company, 140 Fed. (2d) 191. Here a fire insurance policy was intended to cover two buildings. Since the policy did not specify both buildings the higher court held that the insurance company was not liable for payment of the insurance on one of the buildings which burned. This court said:

"To hold that the rear building is merely an addition and a part of the front building would be to overlook common sense and common knowledge. . . ."

In other cases higher courts have refused to hold insurance companies liable for losses where the testimony showed the following errors in policies: The quantity of purchased merchandise was incorrectly listed in the insurance policy. A purchaser mortgaged merchandise and failed to impart this information to the insurance company, and receive from the insurance company an endorsement attached to the policy. A purchaser failed to correctly state the true and actual value of the insured merchandise. A purchaser failed to keep books required by the terms in the insurance policy. A purchaser changed the location of insured merchandise without notifying the insurance company's general agent and having an endorsement attached to the policy. A buyer and seller of merchandise failed to comply with the terms of an insurance policy which required the books to be kept in a fire proof safe. A buyer and seller failed to comply with an insurance policy's clause which prohibited sleeping quarters in the same building where the merchandise was stored. A purchaser of merchandise had a fire loss resulting from defective repairs made to a heating system by the purchaser himself. A buyer and seller failed to comply with state laws regulating repairs and maintenance of the building, in which the goods were stored, to eliminate fire hazards.

Things You Can't Do

For the benefit of readers who may desire future reference data as to what *can't* be done, in order to collect losses on an insurance policy, the following explanations are based on late and leading higher court decisions.

You can't recover payment on an insurance policy if the statements in your application are false or untrue. This is so although the company's insurance agent told you to make the false statements.

In Rhodes v. Metropolitan Company, 172 F. (2d) 183, the higher court held that an insured's false representations in an application for insurance were representations material to the risk and avoided validity of the policy.

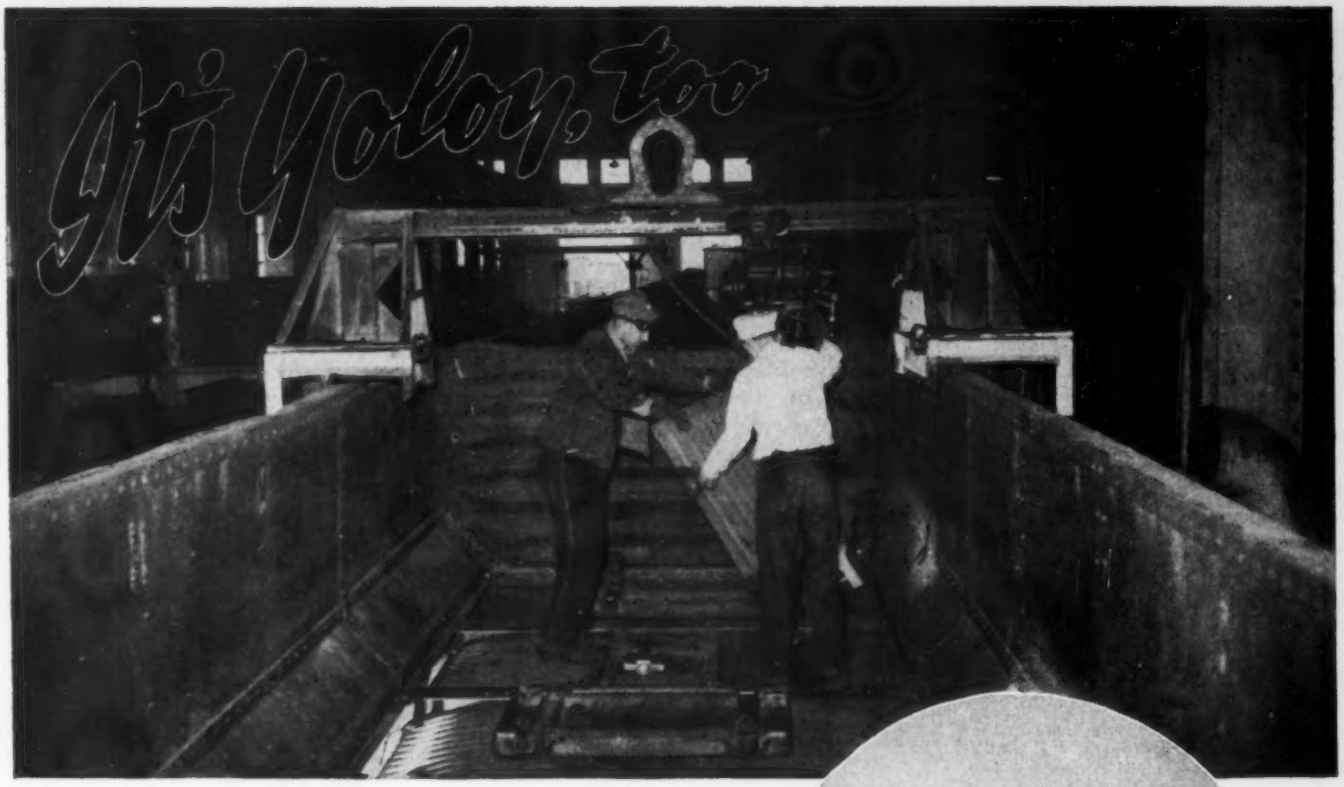
You can't rely upon statements made by an insurance company's special or ordinary agent, because the higher courts hold that he is *your* agent.

See Lee v. Aetna Cas. & Sur. Company, 81 F Supp. 1008. Here the testimony showed that, by mistake, the application for a liability policy misdescribed merchandise. The higher court held the policy void although the misdescription was the agent's fault.

You can't collect insurance if you violate a clause in the policy.

For illustration, in Gelb v. Automobile Insurance Company, 168 Fed. (2d) 774, the testimony showed facts, as follows: An insurance company issued combined Hull and P. & I. Policy for $8,000 on a 47-foot boat. The policy contained this clause: "Warranted that the said boat shall be laid up and out of commission from November 1st, at noon, until May 1st, at noon."

The boat was never hauled out on shore, but was left afloat moored to two dolphins about 500 feet off shore in open water until November 29th, when she sank. The insur-



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ance company refused to pay the loss and the owner of the boat filed suit.

The counsel for the insurance company contended it was not liable because the owner of the boat had breached the clause warranty to lay the boat up and out of commission from November 1st to May 1st.

The higher court *refused to hold the insurance company liable,* saying:

"We think that the requirements of the alleged custom to place the boat on shore or in an unexposed place are inescapably linked with a proper care for the safety of the vessel."

Consult the General Agent

You can't hold an insurance company liable on an incorrect policy which an ordinary insurance agent authorized the insurance company to issue.

In Ferla, 59 Atl. (2d) 174, the higher court held that an ordinary insurance agent is legal agent of the insured and *not* the insurance company. Hence if the agent fails to give you an insurance policy covering losses you specified, the insurance company is not liable.

This is *not* the law with respect to *general agents* of an insurance company. An insurance company is liable for promises and other representations made by its general agents. Hence, purchasers, and other readers, who are in doubt regarding protection afforded by an insurance policy should write to the *general agent* of the company and receive from him definite information and representations concerning the policy.

You can't recover insurance on a policy you violated.

For illustration, in Ortiz Hardware Company v. National Insurance Company, 75 F. Supp. 550, it was shown that a company held a fire insurance policy which contained a clause in which the company agreed to keep all its books and "the last preceding inventory duly locked under key in a fireproof safe in the night time and at all times" when the business was open to commercial operations.

One night a fire destroyed the company's building and contents including the books, documents, invoices, cancelled checks, etc., relating to the business. The testimony showed that the company did not have an iron or fireproof safe.

In view of this testimony the court promptly held that failure of the insured company to comply with the above clause in the insurance policy entitled the insurance company to refuse to pay the loss. Also, this court held that failure of an insured to read his insurance policy is no valid excuse for failure to comply with its provisions.

What Constitutes Theft?

You can't collect on a theft insurance policy if your employe intentionally or unintentionally delivers goods to a thief.

In Starlight Fabrics, Inc. v. Glens Falls Ins. Company. 79 N. E. (2d) 812, it was shown that a truckman called at a purchaser's warehouse for goods. An employe in good faith delivered the goods to the truckman, and in fact helped him load the truck. Later it was discovered that the truckman was a thief and had no authority to take delivery of the goods.

In subsequent litigation the higher court held an insurance company not required to pay the loss on a "theft" insurance policy.

You can't expect a court to decide in your favor if the insurance policy does not clearly cover your loss. See Hayutin, 201 Pac. (2d) 371.

You can't collect insurance not covered clearly by the terms of your policy. See Dill, 50 S. E. (2d) 923. Also, see Standard, 82 N. E. (2d) 836.

You can't expect to recover for any losses if you failed to protect the insured goods according to the clauses in the insurance policy. Niagara, 170 Fed. (2d) 667.



READ ALL THE FINE PRINT IN YOUR POLICY - IT'S A CONTRACT

Pay Insurance Premiums Promptly

It is common practice among purchasers to pay for insurance policies *after* the same are renewed, and the bill for the insurance is received from the insurance company's agent. This is bad practice and may result in heavy financial losses.

For example, in Mallard v. Indemnity Insurance Company, 216 S. W. (2d) 263, the testimony showed that an automobile policy expired on July 31 and the automobile was wrecked August 30. The insurance company wrote the owner of the automobile a few days later and sent a bill for a renewed insurance policy stating that the policy gave protection from expiration of the old policy on July 31. At the time this letter was written the officials of the insurance company had *not* been informed that the automobile was wrecked.

Immediately on receiving the letter from the insurance company the owner of the wrecked car sent a check for the amount of the bill for the new policy, and notified the company of his claim.

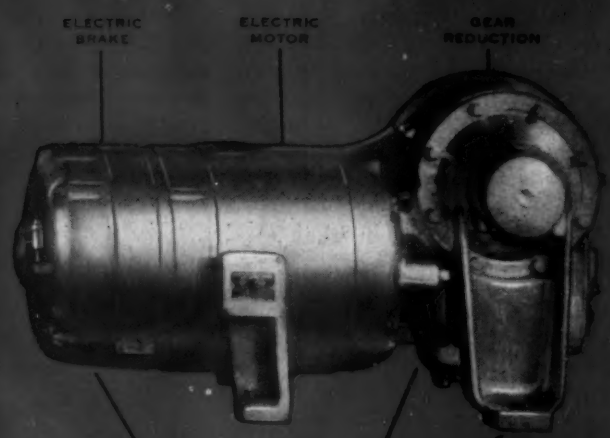
In subsequent suit the higher court held that the insurance company need *not* pay the claim, and said:

" . . . It seems clear that on August 30 (the date the automobile was damaged), there was no valid binding contract of insurance between the parties."

Risk Is Increased

Another important point of law, regarding insurance, is that an insurance company is relieved from paying a loss if the testimony shows that the insured *increased* the normal risk originally assumed by the company.

For example, in Ziebarth v. Fidelity & Guaranty Fire Corporation of Baltimore, Maryland, 41 N. W. (2d) 632, it was shown that one Ziebarth operated a small business in his residence. Ziebarth held an insurance policy which insured his



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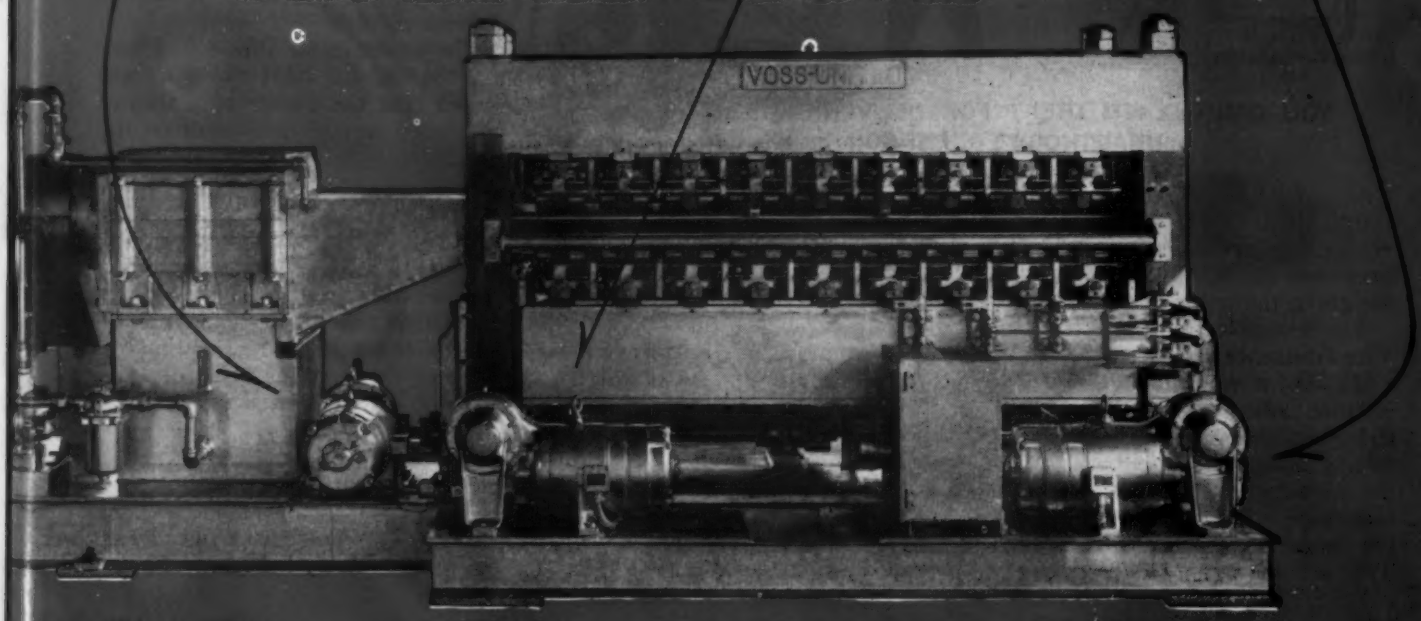
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buildings against fire loss. One day a fire caused a serious loss, but the insurance company refused to pay the amount of the loss on the grounds that use of the property for business purposes invalidated the insurance policy. Ziebarth sued the insurance company but the higher court refused to hold the latter liable, saying:

"The policy described only the dwelling house. There is no evidence of intent to cover anything else except 'private structures' appertaining to the house . . . The evidence shows that the services of the shop were open to the public. It is our conclusion that the use as a repair shop open to the public destroyed its character as a private structure and excluded it from the coverage of the policy.

Insurance Is Assigned

This court also explained that Ziebarth could have had a valid policy, and the insurance company would have been liable if Ziebarth had written the insurance company explaining that he was using a part of his premises for business purposes. Then the insurance company would have issued a rider giving Ziebarth consent to so use his property.

According to a recent higher court, an insurance company is *not* responsible or liable for its agent's promises or statements regarding assigning the policy.

For example, in Smith v. Mut. Fire Insurance Company, 33 N. W. (2d) 206, it was shown that an insurance policy contained a clause to the effect that the policy would be void if assigned without consent of the insurance company. Later the insurance company's agent advised the insured to assign the policy. This was done.

The higher court refused to hold the insurance company liable for a subsequent loss saying that an insurance company is *not* liable for acts or promises of its agents.

This court also explained that one who holds an insurance policy must read it and know what it contains and *cannot rely upon promises* made by the insurance company's agent.

For comparison, see White, 91 U. S. 45. The Supreme Court of the United States stated this law:

Policy Not Forfeited

"It will not do for a man to enter into an insurance contract, and, when called upon to respond to its obligations, to say that he did not read it or did not know what it contained. If this were permitted, contracts would not be worth the paper on which they are written."

All courts hold that an insurance policy is a contract between the insurance company and the insured. Since the insurance company writes the insurance policy, the courts lean favorably toward the insured, in case the policy is ambiguous. In other words, under the law, an ambiguous insurance policy should be construed liberally in favor of the insured. Hence where doubt arises as to the legal construction of an insurance contract, the court will hold the insurance company liable unless the testimony is clearly in favor of the company.

For example, in Aetna Insurance Company v. Rhodes, 170 Fed. (2d) 112, the testimony showed facts, as follows: The Aetna Insurance Company issued to one Rhodes a fire insurance policy against loss by fire in the amount of $33,750.00. The insurance policy contained a clause which required Rhodes to report to the insurance company, each month, the total value of the property insured. The clause clearly stated if Rhodes failed to file with the company any monthly report, then the policy covered *only* the value of the property included in the last monthly report.

During the six months the policy was in force, Rhodes failed to file with the insurance company any monthly report. Then Rhodes had a fire loss. The insurance company refused to pay the loss claiming that Rhodes' failure to file the monthly valuation reports was a breach of the insurance contract, and hence the policy was forfeited.

The higher court refused to hold that the policy was forfeited for two reasons: 1st, the policy's clause said that if Rhodes failed to file the monthly report, the policy covered the valuation listed in the last month's report; and, 2nd, the policy clearly stated that the policy would become void only if Rhodes should willfully conceal or misrepresent material facts, or was guilty of fraud. The court said:

"Apparently Aetna (insurance company) did not believe that failure to make the valuation reports forfeited the policy for, with knowledge that four reports were past due, it gave no notice of cancellation . . . It should be borne in mind that the value of the merchandise was fixed in the policy on the day of its issuance and that such valuation was controlling until the next monthly report was due . . ."

Mortgaged Merchandise

According to a recent higher court, if a building burns and destroys equipment purchased under a conditional contract of sale or mortgage, the purchaser is not liable for the loss.

For example, in Wood v. Phoenix, 34 S. E. (2d) 688, it was shown that the owner of a theater purchased certain equipment on the installment plan. Under the terms of the contract, the title to the equipment remained in the seller until the entire purchase price was paid.

A clause in the sale contract stated that the seller should not be held liable for loss of the equipment in event the building burned. The building burned and destroyed the equipment.

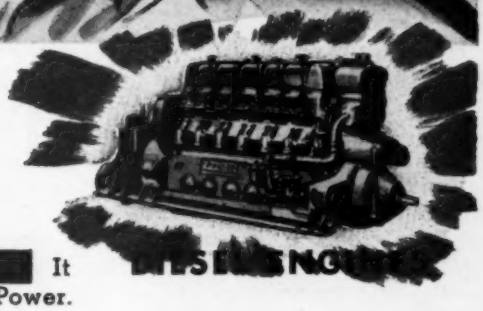
The seller sued the purchaser to recover the balance due on the equipment. The lower court held the purchaser liable, but the higher court reversed the verdict.



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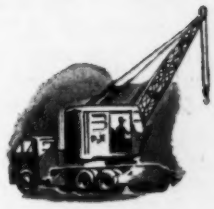


When you skipper a fishing boat, you ask a lot of your engine. You want it fast for maneuvering . . . slow and steady for trawling. You want it packed with power for heavy hauls — yet small and light to make room for them.

That's why fishermen have taken to a new friend with an old name, a new diesel that wears the familiar [redacted] It gives them *all* the Added Values they seek: Flexibility. Power. Compactness. Light weight.

Even *trouble* is short-lived here. Complete cylinder liner assemblies can be replaced *as a unit.* A big feature in *any* diesel service — stationary, mobile, or marine — and only P&H has it!

Mark these words . . . only . . . P&H. For only P&H has the Added Values, among them the *quality* and *service* that have marked every P&H product since 1884.



TRUCK CRANES

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HARNISCHFEGER CORPORATION
P&H



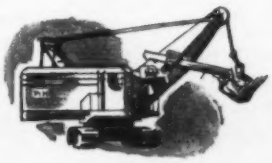
SOIL STABILIZERS



HOMES



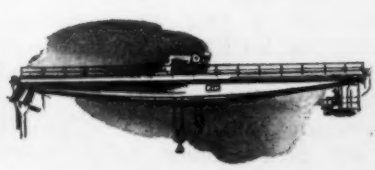
ELECTRIC HOISTS



EXCAVATORS



WELDING EQUIPMENT



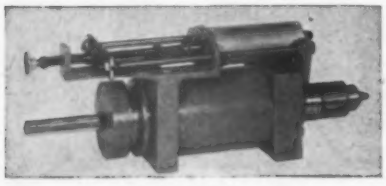
OVERHEAD CRANES

New Products Ideas



If you want more information on New Products items, just list the item numbers in a letter to Purchasing Reader-Service Department on your company letterhead. This also applies to Catalogs and Bulletins described on Pages 19, 20, 23, 24 and 180. See Page 19.

Drilling-Tapping Unit



HyPneuMat, Inc., 647 W. Virginia St., Milwaukee 4, Wis., has introduced a high speed, precision automatic drilling and tapping unit for which many advantages are claimed. The unit utilizes either hydraulic or pneumatic power, offers one stroke or continuous cycling, has a rotating and reciprocating spindle, and permits speeds up to 20,000 rpm. It has a drilling and tapping capacity of ⅜" in steel, and a ⅛" to 3½" stroke. It has infinitely adjustable feed, adjustable stroke for both directions, variable spindle speed, uniform smooth power. The company claims complete versatility for the unit — practical for light, precision and heavy duty work.

No. 101—For further information see page 19

Rubber Pad Kit

Do you have single problems of industrial vibration too small to justify the use of technical personnel? To meet such a situation the B. F. Goodrich Co., Akron, O., has introduced a new self-engineered rubber pad kit it says will eliminate up to 75% of the vibration and shock caused by machinery. The Vibropad kit consists of a 12" square rubber pad, rubber tubes, thick washers, and an instruction booklet. Goodrich designed it to enable the small plant owner to install the pads under the legs of equipment and save the cost of engineering and installation. In addition to eliminating wear and tear on the floor of the building, it is claimed, the pads will reduce employee fatigue caused by noise.

No. 102—For further information see page 19

Eyeshield



Stanley Electric Tools, New Britain, Conn., has a new extra-large safety eyeshield that protects the operator from grinding, sanding, or polishing dust, and from any machine or tool chips. Called the "Fluid-Lite" No. 630, the shield has a 6" x 10" window. It can be mounted on any type machine on a horizontal or vertical surface with the square frame arm post in a horizontal or vertical plane. The large window is said to offer 60% greater visibility and protection. The window's safety glass is covered with plain glass for economical replacement. Other features include full adjustability for most desirable working position, and special bulbs, with the filament supported to withstand vibration.

No. 103—For further information see page 19

Reciprocating Saw



All types of "key-hole" and other "on-the-job" sawing operations are said to be speeded up with the RCS reciprocating Super-Saw which requires no starting hole. Power is provided by any heavy-duty ¼" or 5/16" electric drill, by air drill, or by standard flexible shaft equipment. The tool is held tightly against the material to be cut, with the guide used as a fulcrum, "rocked" into an upright position and then guided along the cutting line. An assortment of special blades permits cutting almost all types of material and the ¾" stroke allows the tool to be used in places too cramped for a normal saw stroke. Bulletin P79 available from the manufacturer, RCS Tool Sales Corp., Joliet, Ill.

No. 104—For further information see page 19

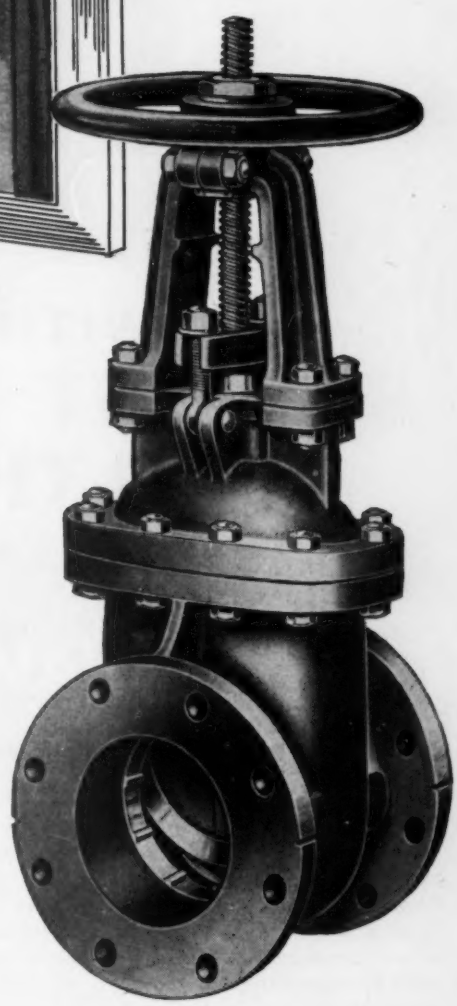
Small Cast Steel Valves

The Wm. Powell Company, Cincinnati 22, O., has announced a new line of small size, high pressure, cast steel valves designed for such services as high pressure steam, boiler feedwater, by-pass, instrument and throttling. Known as Powell Integral Bonnet Valves, they are available in globe, angle and "Y" patterns, classes 1500 and 2500 pounds, in sizes ½" to 2", inclusive, and have socket weld ends. Powell

(*Please turn to page* 132)



Listen
TO LUNKENHEIMER QUALITY



Lunkenheimer valves are quiet. The chatter you hear when ordinary iron valves are opened and closed is *the sound of wear* — of the disc dragging back and forth across the seat rings. But listen to a Lunkenheimer iron valve as it opens and closes — smoothly — silently. It doesn't chatter because it's built with *machined* body guide-ribs — an exclusive Lunkenheimer iron-valve feature. Not only are the guide channels in the disc accurately machined, but the ribs in the body as well. Clearance between machined ribs and guides is so accurate that the disc is guided until *final point of closing*. Seating faces are spared the merciless beating they take in other valves. That's one more example of the *thorough* workmanship that makes Lunkenheimer valves last longer. Your Lunkenheimer distributor will supply you. Call him. Check *all* of the reasons for Lunkenheimer's continued leadership in the iron valve field. The Lunkenheimer Co., Box 360M, Cincinnati 14, Ohio.

IRON • STEEL • BRONZE

LUNKENHEIMER

THE ONE *Great* NAME IN VALVES

Stop THIS WASTE

BEAT THE HIGH COST OF FREQUENT LAMP REPLACEMENTS



WITH THE *RIGHT* LAMPS FOR THE JOB

CHAMPION *Lamps*

SPECIAL **SERVICE**

There *are* special lamps for every special need — and Champion makes them all. ◆ Use them wherever there's shock: **Champion Rough Service Lamps** (illustrated) are built to take sudden shocks and bumps. ◆ Use them wherever there's vibration: **Champion Vibration Service Lamps** are correct around heavy or high speed machinery. ◆ Use them wherever there's splash: **Champion Hard Glass Lamps** stand up under exposures. ◆ Use them wherever high voltages are encountered: **Champion High Voltage Lamps** are specially made for circuits ranging from 220 to 300 volts. ◆ For drying, for heat, for spot and flood lighting, for *any* special need — USE CHAMPIONS! Ask your supplier, or Champion's Engineering Service, to check troublesome locations, and to assist in the solution of your lighting problems. No obligation.



50 YEARS OF SERVICE 1900-1950

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO

(*Continued from page* 130)

says one of the outstanding features is the one-piece construction of the body and bonnet, which eliminates the body-bonnet joint and all possibility of leakage at this point. Literature available.

No. 105—For further information see page 19

Automatic Drill Head



The Dumore Company, Racine, Wis., has combined one of its motors having a double-end armature shaft with a No. 0 precision Jacobs chuck on one end and a rotary vane compressor on the other end, the entire assembly operating as a unit. Result: an automatic drill head that is said to have "very interesting" economies in original cost, flexibility of application, high speed production, simplification of operation, plus savings in drill breakage and scrap losses. The unit can be applied anywhere for drilling diameters from .0135" to .1800" in ferrous or nonferrous metals, plastic, wood, etc. Dumore calls it a natural for multiple drilling operations with an indexing feed set-up. It maintains uniform drilling pressure, and needs no expensive separate air equipment.

No. 106—For further information see page 19

Dust Control

Industrial firms that require an atmosphere substantially free of dust for precision work now have available a new method originally designed to control allergenic "house dust." The product, called Dust-Seal, is offered by L. S. Green Associates, 160 West 59th St., New York 19, N. Y. It is mixed with water and used as the last rinse in floor mopping operations. It can also be used on fabrics, providing they can be safely cleaned with water. Concentrations employed vary with the type of floor being cleaned and the frequency of cleaning. Literature available.

No. 107—For further information see page 19

(*Please turn to page* 134)

When it comes to cutting metal . . .

INDUSTRY COMES TO

ATKINS



only ATKINS makes "Silver Steel"

HACK SAWS, MILLING SAWS, FILES

A saw — any saw — can be only as good as the steel and the workmanship that go into it! And that's why ATKINS saws are so outstanding . . . because they are made of the finest, toughest steel ever formulated for the purpose! . . . and because ATKINS, through many years of research and *learning by doing*, has acquired the "know how" to produce cutting tools that stay sharp longer, that cut faster, that greatly reduce maintenance and operating costs!

of all fine saws . . . .
the finest are "Silver Steel" saws

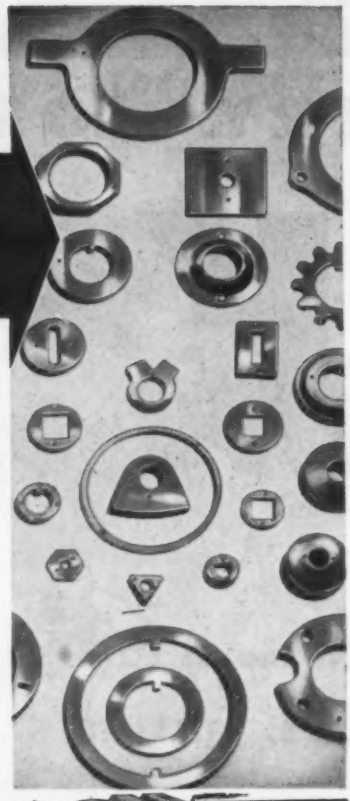
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Home Office and Factory: 402 S. Illinois St., Indianapolis 9, Ind.
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"ATKINS ALWAYS AHEAD"

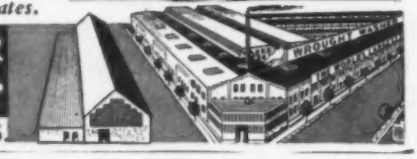
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WROT WASHERS



Better
WASHERS
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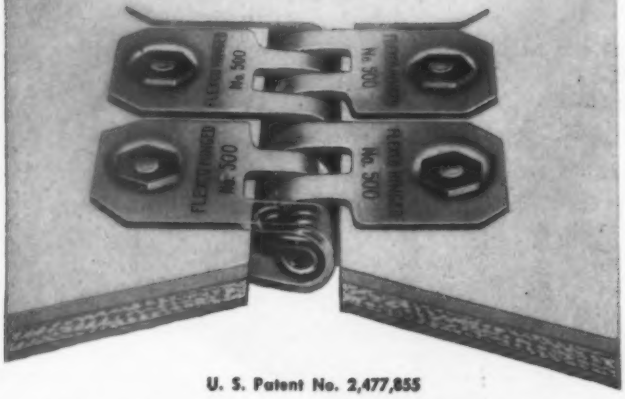
Large volume production, the most advanced methods and facilities, plus more than 60 years of continuous experience in the manufacture of Washers, are factors that enable us to offer you top quality washers and stampings at competitive costs. Over 22,000 sets of dies for making Washers of every type (Standard and Special), from every type of material, for every purpose, in any finish. STAMPINGS of all descriptions; Blanking, Forming, Drawing. *Submit your blueprints and quantity requirements for estimates.*



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- For belts 3/8" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO
4697 Lexington St., Chicago 44, Ill.

Refractory

The Babcock & Wilcox Company, 85 Liberty St., New York, N. Y., has announced a new super refractory for lining high temperature furnaces it says will meet or surpass the specifications of any such refractories now on the market. And B&W has set the price at one-half that usually charged in standard fire-brick sizes. The new material will be known by the trade name of B&W Allmul, being produced from a base of mullite, a well-known super refractory material. Company engineers state that Allmul will not melt until it is heated to more than 3300F, a point nearly one-third higher than the melting point of steel. B&W states that furnaces using the material can be operated at higher and more efficient temperatures for a longer period of time without maintenance interruptions.

No. 108—For further information see page 19

Valve Diaphragm



A new chemically inert diaphragm for Grinnell-Saunders diaphragm valves is being offered by Grinnell Company, Inc., Providence 1, R. I. Kel-F thermo-plastic has been successfully moulded to form a tough and very flexible valve diaphragm which withstands such hard-to-handle materials as chlorinated aliphatic and aromatic compounds, concentrated nitric, chromic, hydrofluoric and sulphuric acids, and most solvents which readily attach rubber and synthetic diaphragms. The new diaphragms are available only for Grinnell-Saunders valves which have been altered to permit the use of a backing sheet which cushions and protects the diaphragm for longer service life. Valve bodies for use with the new diaphragms may be cast of corrosion resistant alloys or can be lined with glass, lead, rubber or other impervious linings

No. 109—For further information see page 19
(*Please turn to page* 138)


Highlights of
Quality
IN TODAY'S FINE KITCHENS
. . . ever-bright with
Superior
Stainless Strip Steel
The brilliant luster of solid stainless signifies *modern thinking* in kitchen equipment—all the way from designer to discriminating buyer. In this market, SUPERIOR Stainless Strip Steel provides all-important durability and sanitary quality . . . helps cut fabricating costs with *precision* in dimensions, tempers, finishes—*ease of handling* in long coils. • May we work with you?
Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

You asked for it... HERE IT IS—

AO's New Metal Ful-Vue Safety GOGGLE!





HANDSOMER IN APPEARANCE • **STRONGER** IN STRUCTURE

With the introduction of the F4100 Metal Ful-Vue, AO's protection against the impact of flying particles reaches its highest development. Here in one goggle, with or without side shields, workers can obtain the peace of mind which comes from assured safety . . . the utmost in comfort over nose and temples . . . the very finest in EYE APPEAL PLUS EYE PROTECTION!

QUICK FACTS

NEW EYEWIRE — A major contribution to *looks with strength.* Outer edges are square instead of round with a deep groove to hold lenses securely in place. Beaded engraving adds a distinctive touch. The lightweight eyewire is strong and durable.

NEW RUGGED ENDPIECE—Streamlined . . . with a wide bearing surface at hinge which minimizes temple drop. Screw heads are countersunk and flush with endpieces for added good looks, non-sagging security.

NEW LIGHTWEIGHT TEMPLE—Oval temples instead of round for greater comfort and attractiveness. Easily adjusted, perspiration proof. Insulated semi or half tubing is another appearance improver and will outlast life of the temple. Tubing will not come off and it can't be discolored by dirt or grease. Both the temple and endpiece screws are AO patented "Ever-tite" construction . . . they keep tight in service yet remove quickly when replacing lenses.

IMPROVED GUARD ARMS AND BRIDGE — Guard Arms are newly shaped — longer with more opening for added ease of adjustment. The bridge is double braced with four contact joints — a feature found only in AO Ful-Vue spectacle goggles.

NEW SIDE SHIELD CONSTRUCTION — A real time saver . . . new one-piece binder and eyewire construction *eliminates necessity of inserting the screen before inserting lenses!* Replacement of lenses can now be made without any interference with or from the side shield.

For these and many other reasons, be sure to see the new F4100. YOUR NEAREST AO SAFETY REPRESENTATIVE CAN SUPPLY YOU.

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



OUR experience and facilities for upsetting, flanging, swaging, spinning, flaring, precision straightening and other difficult fabricating operations, make "Standard" electric weld tubing adaptable to any tubular assembly or part.

Specify "STANDARD"—it pays!

Sizes ½" O.D. to 5½" O.D., 22 B.W.G. to 3 B.W.G.

Address Inquiries to the Standard Tube Company, 24500 Plymouth Road, Detroit 28, Michigan

Threadwell Tools do many jobs



they can do your tough ones

Solving your gaging and cutting tool problems is easier than you think. Threadwell Field Engineers are located all over the country to help you. Get their names by mailing coupon below.

THREADWELL TAP & DIE CO., Greenfield, Mass.

Please send me the name of the Threadwell Field Engineer and the Threadwell Distributor nearest me. I am also interested in the literature checked below.

Name_____ **Pos.**_____

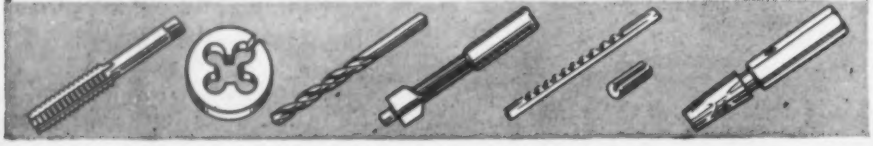
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City_____ **Zone**____ **State**_____

Taps ☐ **Dies** ☐ **Drills** ☐ **Counterbores** ☐ **Keyway Broaches** ☐ **Gages** ☐

Threadwell



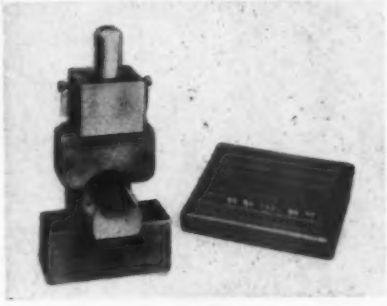
Gas Mask



Acme Protection Equipment Co., 3037 W. Lake St., Chicago 12, Ill., offers a new gas mask face piece with chin-style, chest-style and hose-mask connections in one unit. Acme says the unit retains all the full-vision advantages of its other types. Known as the No. 6, the face piece permits use of the same mask for three different services, eliminating the need for a different face piece for each. Among the innovations is a new type inhalation-exhalation valve for minimum breathing resistance. Bulletin 504 available.

No. 110—For further information see page 19

Stamping Device



M. E. Cunningham Company's new PF-20 periphery stamping fixture, for stamping round or curved metal parts, features a unique type arrangement which permits the use of regular straight body type for curved marking. This allows the characters to stamp on a specified curved radius, and eliminates the need for retaining pins and slotted type. The holder can be made suitable for one or two rows of type, which is easily changed by removing the face plate of the holder. The fixtures are usually made to order for marking a specific part, but they also can be manufactured adjustable for use on various shapes and sizes. M. E. Cunningham Co. is at 154 E. Carson St., Pittsburgh 19, Pa.

No. 111—For further information see page 19

(Please turn to page 140)

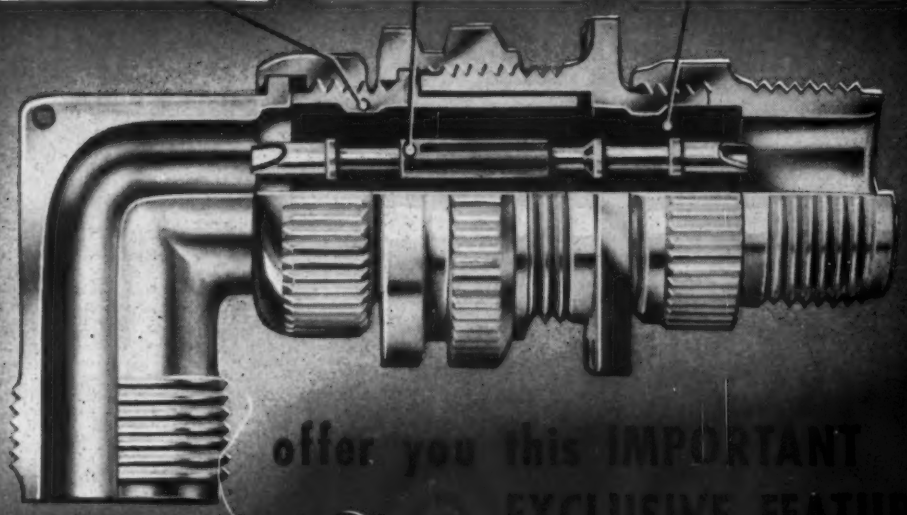
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ELECTRICAL CONNECTORS

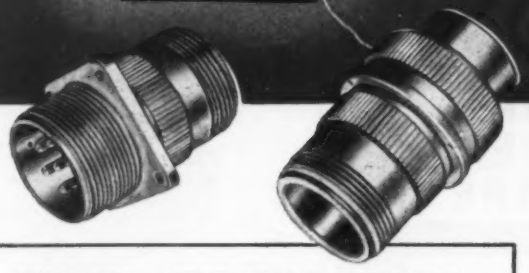
SHELL
High strength aluminum alloy . . . High resistance to corrosion . . . with surface finish.

CONTACTS
High current capacity . . . Low voltage drop . . . No additional solder required.

SCINFLEX★ ONE-PIECE INSERT
High dielectric strength . . . High insulation resistance.



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. . . PRESSURE TIGHT SOCKET CONTACT ARRANGEMENTS!

Outstanding design and fine workmanship, combined with materials that meet the requirements, assure the splendid performance of Bendix-Scintilla "pressurized" electrical connectors. These units include both pin and socket arrangements for *all* sizes of contacts.

★**SCINFLEX** dielectric material is a new development that assures unequalled insert performance. It is available only in Bendix-Scintilla Electrical Connectors.

PLUS ALL THESE OTHER FEATURES

- Moisture-proof
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SAVE
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Rigid CASTER FORKS Swivel

Wide-base caster forks engineered to carry heavier loads without adding dead weight to equipment. Available in identical pairs in a wide range of sizes.





More AIR VOLUME • More STABILITY • More LOAD CAPACITY
DELIVERS Long Mileage IN HI-SPEED SERVICE

SEND FOR CATALOG . . . DEPT. 7
THE GENERAL TIRE & RUBBER CO. AKRON, OHIO

Fork-Shovel



Time savings in handling such loose materials as castings, forgings, coal, coke and broken stone are claimed for a heavy-duty fork-shovel attachment for lift trucks, with 7¾" tines. The attachment is made by the Industrial Truck Division, Clark Equipment Company, Battle Creek, Mich. The heavy, tapered tines are said to ease their way into and under materials with minimum tractive effort, and with the least possible degree of shock to the truck. The hydraulically controlled shovel can be tilted up to 40 degrees above horizontal, including 10 degrees tilt of the upright assembly. This permits it to scoop up maximum loads without having to ram the stock pile. Hydraulic controls ease the dumping action to minimize shock and strain on the upright assembly.

No. 112—For further information see page 19

Tool Box



Lyon Metal Products, Inc., Aurora, Ill., is marketing a line of general purpose tool boxes, suited to all types of requirements. The 15" long, 6½" wide, 6½" high, model shown above is a utility box, finished in metallic bronze, that holds an average assortment of tools used by most workers. The cantilever tray has five compartments. The tray swings smoothly and easily to one side as the top is opened, leaving ample space to reach the contents of the box. Spring on the padlock hasp forces it tight over staple whenever top is closed, and the box cannot be opened accidentally when being handled.

No. 113—For further information see page 19

(*Please turn to page* 142)



TRIMBLE, INC., Rochester, N. Y., draws tops for its nationally famous baths and playtables *in a single stroke from a pretrimmed blank* of Kaiser Aluminum 150S.

Trimble trims costs, improves products with new 150S

TRIMBLE, INC., previously produced their tray top, shown on the Playtable and Kiddie Bath above, from 52SH32 aluminum. Now, after a gauge for gauge conversion, they're using Kaiser Aluminum 150SH36—*and getting a better product at lower cost!*

Kaiser Aluminum 150S gives them increased dent resistance! Kaiser Aluminum 150S gives them a more attractive etched finish! Kaiser Aluminum 150S gives them the required strength!

And the lower material cost of Kaiser Aluminum 150S is a cash-in-hand advantage to Trimble—and scores of other manufacturers!

Why not let 150S—the world's most versatile aluminum alloy—go to work for *you?*

IF YOU'RE USING 3S, you'll get up to 40 per cent greater strength in finished parts by changing to 150S. Nearly the same workability. Harder surface. Finer grain structure. High lustre buffing. Superior etch finishes.

And up to 10 per cent less material cost where greater strength allows gauge reduction.

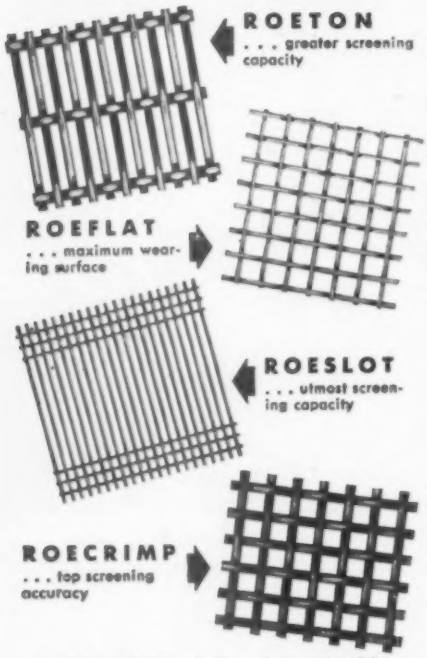
Give your product the advantages that only Kaiser Aluminum 150S can give it. Call the nearest Kaiser Aluminum office today for more information!

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A major producer in a growing industry

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• ALL FOUR of the above Roebling screen constructions can be supplied in Roebling Stainless, Abraso, Roetemp, Monel or other metals. Thus you can combine the most efficient construction for your operations with the metal that will give longest life to your screens. And what's more, both Roeslot and Roeton can be had in Roeflat construction which has 75% more metal wearing surface—extreme wear resistance—longer life. For smaller sizes in square mesh, Roecrimp meets exacting requirements for openings from ⅛" to 7/16". Send coupon for full information.

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Woven Wire Fabrics Division
John A. Roebling's Sons Co., Roebling, N. J.
Gentlemen: Send me full information about Roebling Woven Wire Screens for maximum service and economy.

Name.....Title.....

Company.....

Address.....

City.....State.....

A CENTURY OF CONFIDENCE

Micrometer Depth Gages



The L. S. Starrett Company, Athol, Mass., calls its new No. 449 the most versatile of all micrometer depth gages. It has blade-type rods approximately .045" thick by ⅛" wide instead of a round rod, which makes it ideal for all types of depth measurements. The blade turns under friction, so it can be positioned at any angle relative to the base. In actual use for depth measurements, the blade does not turn, but moves perpendicularly only. This feature permits measuring the depth of narrow shoulders without the blade rolling off, also slots and recesses as narrow as .045". No-glare, rust resistant Satin Chrome Finish on sleeve and thimble. The gage is available in two sizes providing bases either 2½" or 4" long.

No. 114—For further information see page 19

Respirator Hood



Protection against dust and paint pray operations is offered by American Optical Company's (Southbridge, Mass.) new flyweight respirator hood, the No. 75. Extremely light and comfortable, the hood incorporates AO's R2000 respirator which protects against a variety of dusts or gases by means of seven specific cartridges. Hood design assures full and free movements of the head and neck. It provides complete protection for eyes, head, neck, shoulders and respiratory organs. Available in white nylon, olive green twill or white muslin. Pamphlet S-1162 available.

No. 115—For further information see page 19

(*Please turn to page* 144)



FLAT WASHERS LOCK WASHERS TO MEET ARMED FORCES SPECIFICATIONS

HERE THEY ARE— QUICK DELIVERIES!

You can fill your contract needs in flat and lock washers at Garretts. We manufacture a complete line of high quality washers made to meet the most exacting specifications of the Army, Navy and Air Force. These product-proved washers include:

AN 935	AN 960
AN 940	AN 961
AN 945	AN 970
AN 950	AN 975
AN 955	NAS 143

NAS 143C
Ordnance BEBX1
Ordnance BEBX2
Ordnance BEBX3
Ordnance BECX3
and many others

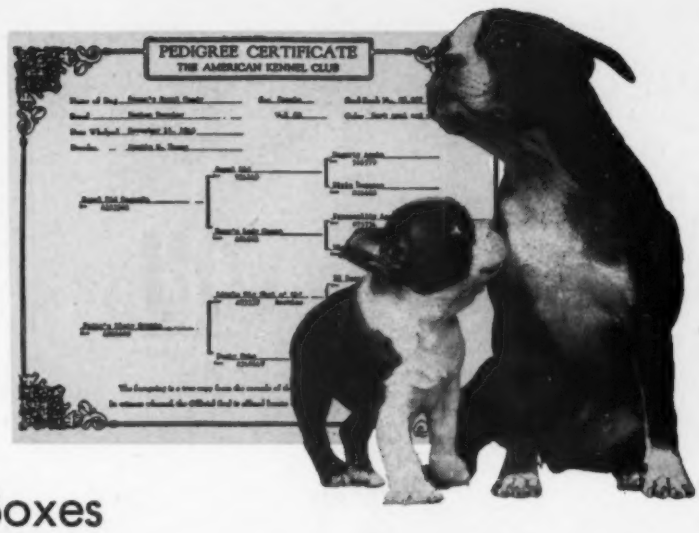
For high quality and quick deliveries on the above washers, send your order to Garretts. We can supply them in regular steel, spring steel, stainless steel, brass, bronze, monel metal, aluminum, Alclad and copper as specified. We plate them with zinc, cadmium, nickel, brass, chrome . . . or they can be parkerized.

Garrett, as a manufacturer, offers you one source and quick deliveries on all types of small parts—flat washers, spring lock washers, stampings, springs, hose clamps, snap and retainer rings. Write for new folder of specifications for Armed Forces washers.

Manufactured by

GEORGE K. GARRETT CO., Inc.
Philadelphia 34, Pa.

GARRETT
OF
PHILADELPHIA



The Boston Terrier was bred in Boston about sixty years ago from English Bulldog and white English Terrier stock. This little fellow is exceptionally lively and bright, and truly deserves the title of "American Gentleman."

When You Buy Boxes

Look First for the Pedigree

MAKERS of famous brand-name products cannot afford to gamble on corrugated containers. They must have a box that will carry their product safely from factory to dealers' shelves all over America.

That is why Stokely-Van Camp pack Stokely's Finest canned vegetables, dinner table favorites of millions, in Union boxes—the boxes with a pedigree.

75 years of leadership in kraft packaging stands behind Union boxes. Every step in the making, from timber to finished box, is quality-controlled by one management in America's largest pulp-to-container plant.

Vast forest resources, four of the most modern corrugating plants, and five of the nine largest paper machines in the world are your assurance of consistent quality, dependable service and fair price, today and in the future.

That's why, every month, more famous national-brand products are shipped in Union boxes.



TRADE MARK UNION

Dependable Packaging Since 1872

UNION Corrugated Containers

UNION BAG & Paper Corporation

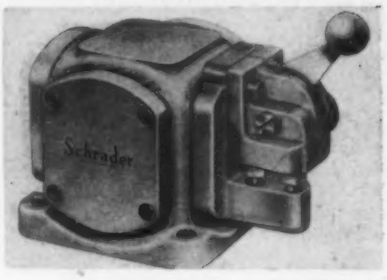
Principal Offices: WOOLWORTH BLDG., NEW YORK 7, N. Y.

Corrugated Container Plants: **SAVANNAH, GEORGIA • CHICAGO, ILLINOIS • TRENTON, NEW JERSEY**





Air Control Valve



A. Schrader's Son, Division of Scovill Mfg. Co., Inc., 470 Vanderbilt Ave., Brooklyn 17, N. Y., is offering a new design in 4-way air control valves. The new valve is ½" size, specially designed for base mounting with manifold pipe ports for concealment of piping. It is designed for unrestricted air passage of 250 cu. ft. per minute at 100 lbs. line pressure. It incorporates, as an actuating medium, a sliding seal valve, while the main body has a diaphragm sealing action. The valve can be manipulated with a small finger.

No. 116—For further information see page 19

Relays



New type D-3 and DT-3 relays, superseding the previous types D-2 and DT-2, are available from the Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pa. The type D-3 relay is for service in d-c circuits to furnish protection against overcurrent, undercurrent and reverse current. Operating voltage is supplied by a shunt in series with the protected line. The moving coil is in parallel with the shunt so it will receive current in proportion to the current flowing in the line to be protected. Type DT-3 relay is for protection of transformers and a-c or d-c motors and generators from damage which will result from abnormally high temperatures. An exploring coil in the windings of the protected apparatus forms one leg of a resistance bridge which supplies the operating energy for the relay.

No. 117—For further information see page 19
(*Please turn to page* 148)



Metal sculpture executed in Weirzin steel by Lyman Beckwith. Cutting and shaping of figures demonstrates exceptional qualities of Weirzin electrolytic zinc coated steel.

What's Best About This Kitchen?

Maybe you'd want to make some changes in the arrangement, color scheme, lighting. But there's one thing about this kitchen that can't be improved . . .

Just this: Most everything in it is made of *steel*, metal of a million uses.

The household appliances are steel and the kitchen cabinets are steel . . . sturdy, fire-safe, lasting, flawlessly made. The wall tile, window sash, lighting fixtures, venetian blinds, canisters . . . right down to the cans on the shelves! . . . are made of steel to make them better.

So paste this thought in your hat for the products you are manufacturing. They will provide more lasting satisfaction . . . at lower cost with steel!

- *Weirzin Electrolytic Zinc Coated Sheets and Strip*
- *Weirite Tin Plate and Tin Mill Products*
- *Weirton Hot-Rolled and Cold-Rolled Sheets and Strip*
- *Weirton High-Carbon Cold-Rolled Spring Steel*
- *N-A-X High-Tensile Steel*

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

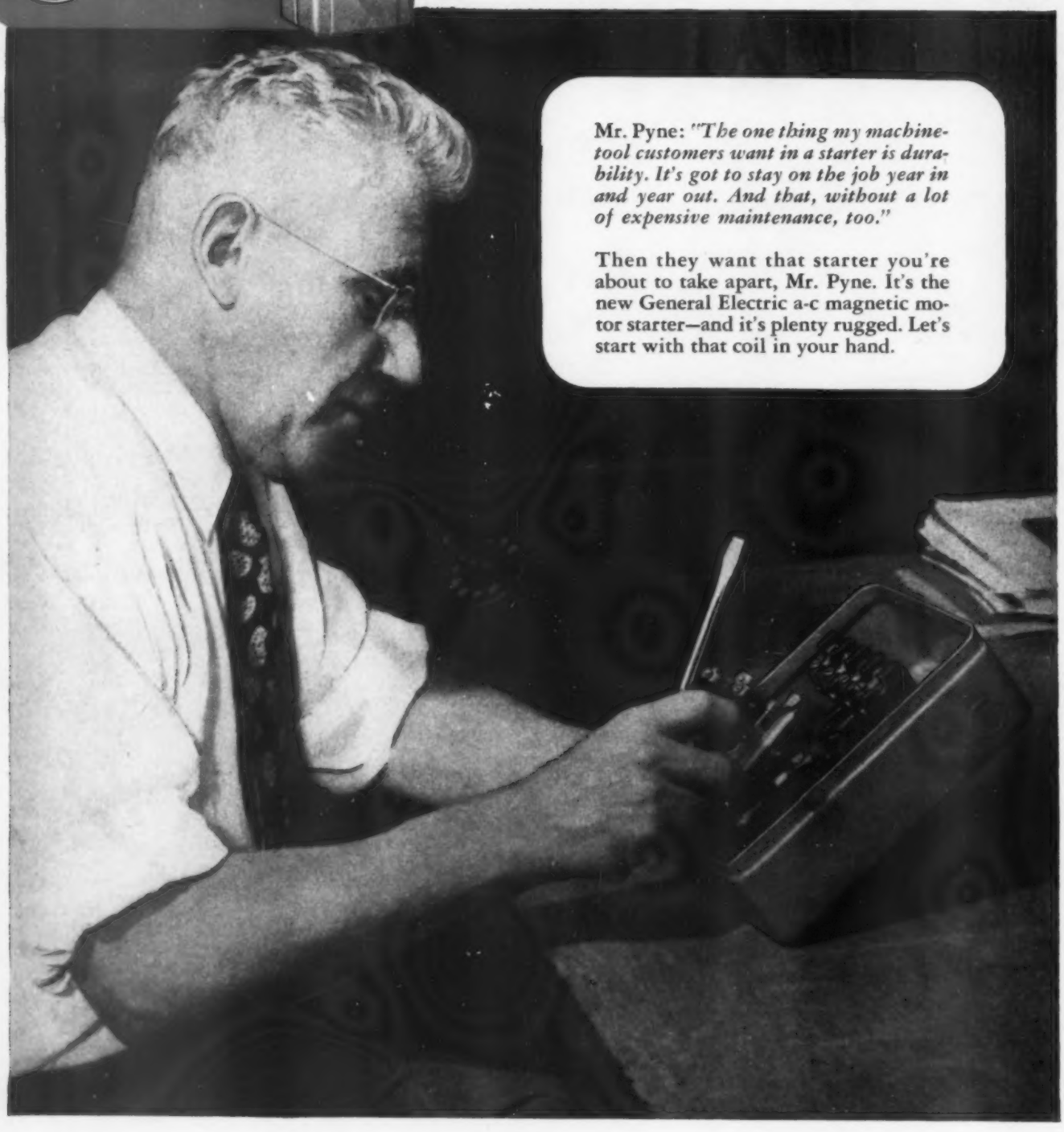
New!

MOTOR STARTERS



5 reasons why

R. S. PYNE, THE VAN NORMAN COMPANY,



Mr. Pyne: *"The one thing my machine-tool customers want in a starter is durability. It's got to stay on the job year in and year out. And that, without a lot of expensive maintenance, too."*

Then they want that starter you're about to take apart, Mr. Pyne. It's the new General Electric a-c magnetic motor starter—and it's plenty rugged. Let's start with that coil in your hand.

GENERAL ELECTRIC

730-11

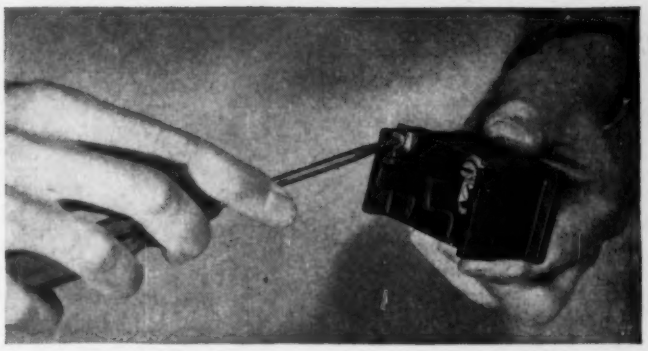
G-E starters last longer!

PROVES IT FOR HIMSELF WITH THE SCREWDRIVER TEST



Mr. Pyne: *"Looks different. What's it got?"*

1 That coil—we call it the "strong box" magnet coil—lasts two to five times longer than a conventional coil. Suppose the electrician's screwdriver slips and hits the coil. The windings can't be damaged because they're firmly locked in a block of molded plastic.



Mr. Pyne: *"Will these terminals work loose?"*

2 Not a chance! They're permanently anchored in the coil enclosure so they can't loosen, even after years of operation. You'll notice they're on the front of the coil, too. That makes for easier servicing.



Mr. Pyne: *"This magnet moves smoothly enough."*

3 Yes—and you can be sure it will do just that even after it's been in service for years. That's because the plastic coil block is made with a permanent "molded in" lubricant. No metal-to-metal friction, no bearings to wear!



Mr. Pyne: *"Contacts that burn easily seem to be a major headache. How about these?"*

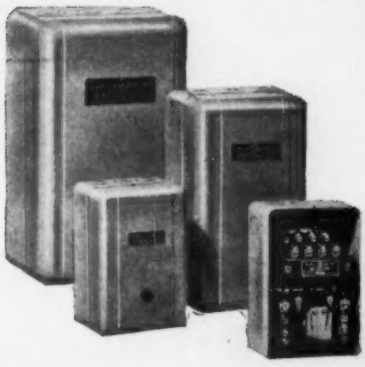
4 Under average conditions you can count on these contact tips to stand up even on the toughest "start-stop" service. They're made of fine silver and there's little chance of their welding together thanks to a high initial tip pressure. And the arc hood keeps each tip protected in its own chamber.



Mr. Pyne: *"What about corrosion?"*

5 No problem at all! All steel parts are zinc plated. The arc chutes are impregnated with a special wax to resist moisture absorption. Finally, the case is coated with a special corrosion-resisting material and painted an attractive gray.

WHY DON'T YOU BUY ONE AND COMPARE



Make the screwdriver test yourself — and see why the new G-E magnetic motor starter lasts longer than any other you can buy. Your G-E representative or distributor salesman can supply you with this new starter from stock in NEMA sizes 0, 1, 2, and 3 for a-c motors up to 50 hp. For a complete description, write for the "tell all" bulletin, GEA-5153. Section 730-11, Apparatus Dept., General Electric Company, Schenectady 5, N.Y.

Roll-Easy Colson CASTERS Reduce Noise, Save Floor Surfaces



Scientifically designed tires plus the easy-rolling, easy-turning quality of Colson casters prevent scratching and gouging—keep all kinds of floors like new. In department stores, restaurants, offices and industry Colson casters are the nation's top replacement choice.

For everything portable, light or heavy loads—for wood and metal furniture—there's a Colson caster designed to meet your needs—exactly. Write us or consult the yellow pages of your phone book for the local Colson office.

THE COLSON CORPORATION
ELYRIA, OHIO

Please send free 68 page catalog —"Colson Casters"

Name_____

Position_____

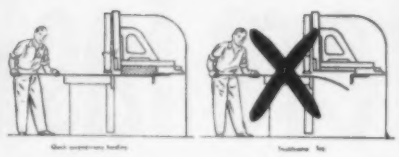
Company_____

Street_____

City_____ Zone_____ State_____

THE COLSON CORPORATION
ELYRIA, OHIO

Sheet Support



The tough job of gauging light gauge sheets that sag so much that they do not strike the gauging angle is made easier by a new development of The Cincinnati Shaper Co., Garrard & Elam Sts., Cincinnati, O. The attachment, called the No-Sag magnetic sheet support, is used on Cincinnati shears. This is the way it works: A 20 gauge sheet extending beyond the knife 20" will sag approximately 5", making it impossible to accurately gauge the sheet with the back gauge. The magnetic sheet support, with its roller arrangement, supports the sheet to be sheared, so that it can be pushed against the back gauge angle for accurate gauging. There is no noticeable drag on the sheet due to the magnetic holding.

No. 118—For further information see page 19

Lubricant Guns



Two new design high pressure electric powerguns, for use where air power is not available, have been announced by the Alemite Division of Stewart-Warner Corp., 1826 Diversey Pkwy, Chicago 14, Ill. The 25-lb. gun, Model 7170-R will deliver 14 ozs. of light or medium lubricant per minute at 70F. It will handle all greases that seek their own level and develops 5,000 lbs. pressure. The 40-lb. gun, Model 7175-R, handles all types of grease, fibrous, heavy or light. It has helix arm and worm gear priming, and delivers 5½ ozs. of heavy fibrous lubricant per minute at 70F. It develops 5,000 lbs. pressure. Motor in both models shuts off automatically when maximum pressure is built up.

No. 119—For further information see page 19

(*Please turn to page* 150)

for ALL-AROUND HAND PROTECTION



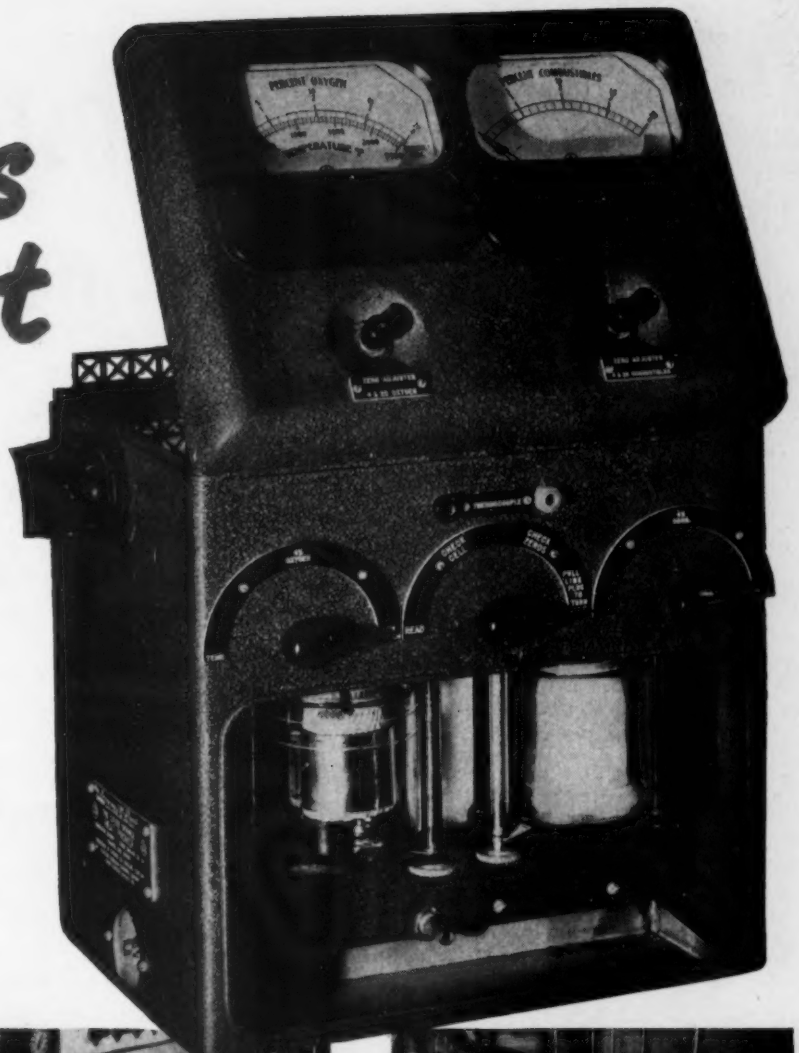
U. S. DIPPED NEOPRENE CANVAS UTILITY GLOVES

In knit wrist or gauntlet style, these handy "U. S." specials are for almost any kind of indoor and outdoor work, around the house or in the car, in the garden, on the farm, wherever hand protection is needed. Sportsmen and workmen use them for protection against cuts, splinters, abrasion, water, oils, mild acid solutions and disinfectants. Curved fingers, good flexibility and soft flannel lining make for extra comfort.

U. S. INDUSTRIAL GLOVES

UNITED STATES RUBBER COMPANY

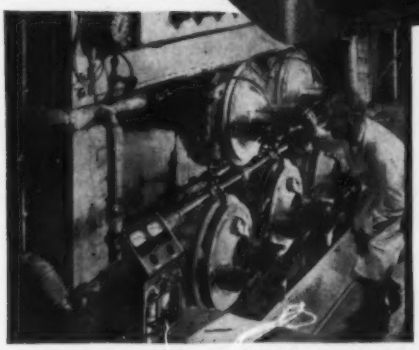
This Miraculous Instrument Tells All!



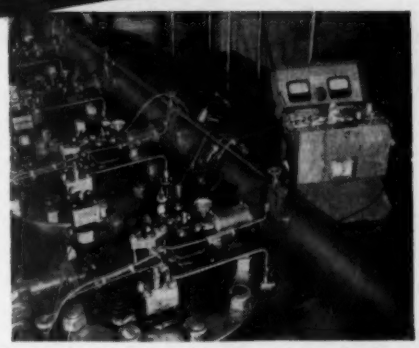
Yes, the Cities Service Heat Prover tells all you want to know about the combustion efficiency of gas and Diesel engines...and industrial furnaces of all types.



1. Hundreds of Industrial Firms — including leading steel, locomotive, truck, automobile, aircraft, tool, instrument manufacturers and others, are profiting from this unique service. Above shows use on Open Hearth Steel furnace.



2. Immediate Production Increases — are realized by fast control of furnace atmospheres. The Heat Prover quickly and accurately registers both excess oxygen and unburned fuel being wasted on this industrial boiler.



3. Gas and Diesel Exhaust Analysis — here being made on a large 4-cycle Diesel. This remarkable instrument gives a continuous record of what percentage of the fuel entering the combustion chamber is converted into productive energy.

CITIES SERVICE



QUALITY PETROLEUM PRODUCTS



FREE . . . *This Helpful New Booklet*

CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 713
New York 5, New York

Please send me without obligation your new booklet entitled "Combustion Control for Industry."

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*City*_____ *State*_____

Want Additional Product Information? See Page 19.

CUT PAINTING COSTS Right Down the Line - WITH Gold Stripe BRUSHES!



NOT only do *Gold Stripe* brushes give you better all-around plant painting performance . . . but in the long run, they bring your costs down. Quality brushes do the job right, last longer . . . and there's nothing to match *Gold Stripe* for quality.



From the business end of the top-grade, *pure* bristle to the tip of the fine hardwood handle . . . each *Gold Stripe* brush is designed by master craftsmen under job-tested conditions. They're made to last, and the time-honored LIFE SAVER jacket helps you give them the proper care they deserve . . . keeps them lively, straight and clean after thousands of yards of painting work.

***When low cost is a factor** be sure to see the Bristle-Neoceta and Neoceta families. Available at big savings.*

SWEEPS, DUSTERS, SCRUBS TOO!

Pittsburgh, makers of the most complete line of industrial brushes, has solved your maintenance problem, too. The famous Lightning Line of maintenance brushes has no peer for long, hard usage.

FOR INFORMATION:

Write us or contact one of our nearby branches for fast, efficient service. PITTSBURGH PLATE GLASS COMPANY, *Brush Division,* Dept. M-3, 3221 Frederick Avenue, Baltimore 29, Maryland.

PITTSBURGH Gold Stripe BRUSHES FOR INDUSTRY

BRUSHES • PAINT • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Hand Soap

Hexachlorophene, the new chlorinated diphenyl methane compound, is contained in a new antiseptic liquid hand soap developed by West Disinfecting Co., 42-16 West St., Long Island City 1, N. Y. The soap, intended for the special use of food handlers and industrial workers, is said to be among the first to contain the compound, which helps reduce bacterial flora on the skin. It is the first to contain both hexachlorphene and lecithin, an emollient and skin-softener which helps reduce certain skin irritations caused by frequent hand washing. West says the soap will not only do an excellent job of cleaning and removing dirt, grease and other foreign matter, but will also remove a high percentage of many micro-organisms. Ordinary soap removes only a limited number Bulletin available.

No. 120—For further information see page 19

Drill Press



South Bend Lathe Works, South Bend 22, Ind., has a new low priced 14″ drill press, ruggedly constructed for continuous industrial service, in both bench and floor models. Among the features in this "Economy Model" are: automatic belt tension device maintains proper tension on the motor belt; spring tension helps absorb shock if the drill should catch in the work; quiet running at all speeds. South Bend says the drill is constructed so as to assure long life and retention of original accuracy. General specifications are: capacity to drill to center of 14¼″ circle, maximum drill size ½″ in steel, spindle run-out .005″, spindle square to table within .0075″ in 5″. Various accessories are available.

No. 121—For further information see page 19

(Please turn to page 152)

In all the world there's only one TUBE-TURN Welding Fitting as shown by this trade mark... the right mark for every need in welding fittings and flanges.

TUBE-TURN

TRADE MARK

More than ever, the services of your TUBE TURNS Distributor can be important to the smooth operation of your business.



TUBE TURNS, INC., LOUISVILLE 1, KENTUCKY DISTRIBUTORS IN ALL PRINCIPAL CITIES

DISTRICT OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • CHICAGO • HOUSTON • TULSA • SAN FRANCISCO • LOS ANGELES

In Canada . . . Tube Turns of Canada Limited, Chatham, Ontario



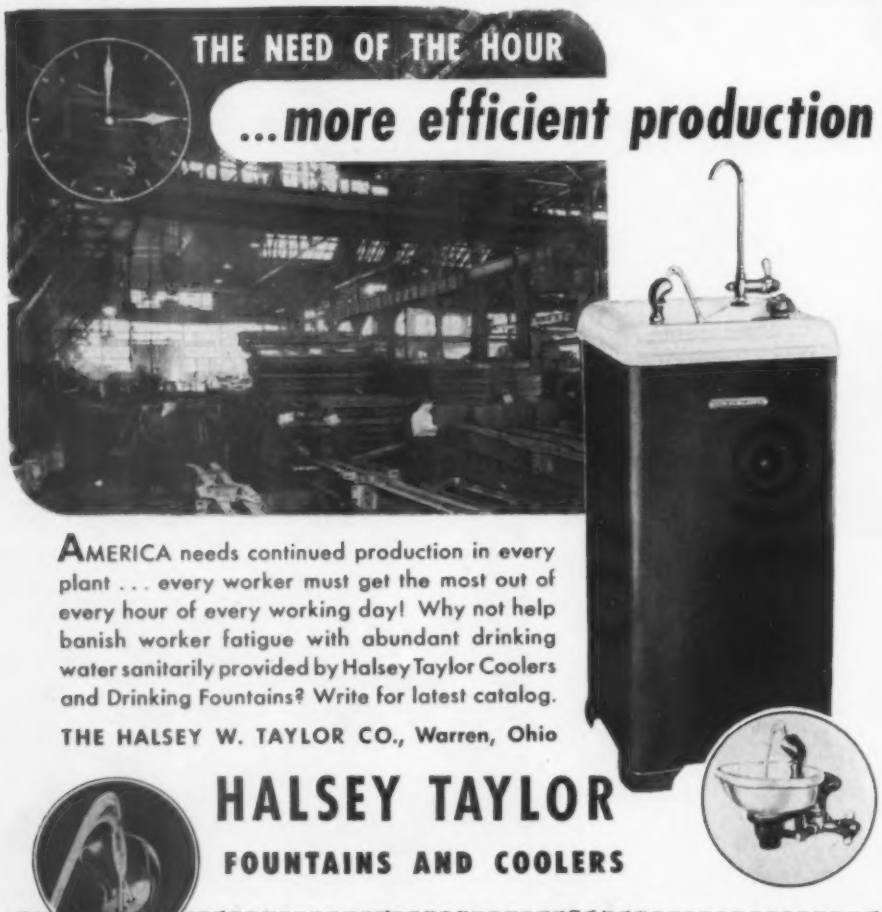
Speer carbon brushes are popular with the men who make and maintain portable generators—and rightly so! They know that long-lived Speer brushes are constructed to meet widely-fluctuating load demands and provide excellent commutation with relative freedom from oxidation.

Speer's complete line of carbon brushes is backed by more than 50 years of experience. As a result, Speer brushes offer outstanding performance regardless of load conditions . . . highest current-carrying capacities . . . freedom from overheating, sparking, and excessive wear and energy loss. Complete experimental and testing facilities are available for your design or maintenance problems.

Speer
CARBON COMPANY
ST. MARYS, PENNA.

brushes · contacts · welding electrodes · graphite anodes · rheostat discs · packing rings · carbon parts

CHICAGO · CLEVELAND · DETROIT · MILWAUKEE · NEW YORK · PITTSBURGH



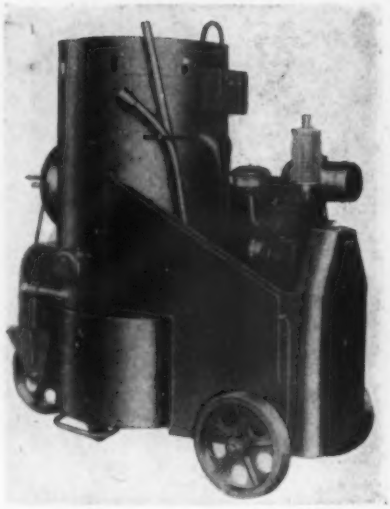
AMERICA needs continued production in every plant . . . every worker must get the most out of every hour of every working day! Why not help banish worker fatigue with abundant drinking water sanitarily provided by Halsey Taylor Coolers and Drinking Fountains? Write for latest catalog.

THE HALSEY W. TAYLOR CO., Warren, Ohio

HALSEY TAYLOR
FOUNTAINS AND COOLERS

F-6

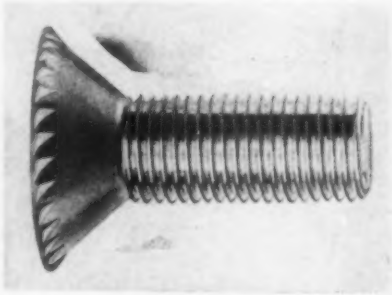
Cleaning Unit



A gasoline-engine powered vacuum cleaner that "cleans wherever it goes," independent of electric power, has been announced by the Air Appliance Division of the U. S. Hoffman Machinery Corp., 105 Fourth Ave., New York 3, N. Y. Designated as the Hoffco-Vac No. 50, the cleaner is designed to give efficient and economical vacuum cleaning for outdoor areas, or for large plants requiring cleaning in widely scattered locations. It operates two 50-foot lines of 1½" hose simultaneously, or one 75-foot or 100-foot length of 2" hose. It has a 7½ cu. ft. capacity dust container, which is equipped with swivel casters for easy disposal.

No. 122—For further information see page 19

Spin-Lock Screw



Faster, tighter, and less costly assembly can be accomplished with a new "washer-less" screw, the Spin-Lock, according to the maker, Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y. The screw comes with hex, pan, truss or flat head. The company says the patented ratchet-like teeth on the underside of the head eliminate the time-wasting step of adding a washer. Being of one piece, with no washer to add, the screw can be hopper-fed, an advantage RB&W

(*Please turn to page* 156)

DRILLS • BENCH GRINDERS • PORTA-
BLE GRINDERS • DIE GRINDERS •
SANDERS • POLISHERS • SCREW
DRIVERS • NUT RUNNERS • ELEC-
TRIC IMPACT WRENCH • TAPP
ELECTRIC HAMMERS • ELECTR
SHEARS • ELECTRIC SAWS •
STANDS • HOLE SAWS •
BRUSHES • HAMMER TOOLS •
BLADES • GRINDING WHEELS
DRILLS • BENCH GRINDERS • PO
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VAN DORN 1/4" HOLGUN® ($39.50) *is famous for its compactness, light weight. Shaped to fit the hand. "Pistol Grip and Trigger Switch." Drills in close quarters.*





VAN DORN 1/2" STANDARD DRILL **$60.00**



VAN DORN 3/4" STANDARD DRILL **$88.00** (without stand)



VAN DORN 5/8" HEAVY-DUTY DRILL **$105.00**

how to cut costs in DRILLING

Your men can turn out drilling jobs faster, more accurately, at lower cost—when you give them the *right* Drill for *every* job! That's exactly what the big, complete Van Dorn Drill line gives you—a choice of 25 models in all, from 1/4" to 1 1/4" capacity!

What's more, the Van Dorn Drill Line gives you full power from Van Dorn-built motors that *can't be stalled*. Gives you extra-tough gears, shaft and chuck spindle, husky housings—quality construction throughout for extra years of use. Gives you a choice of handles for easiest operation, a choice of speed, power and price in most sizes. Gives you double usefulness for portable drilling or drill press work, with Bench Stands to fit all models.

Your nearby Van Dorn Distributor is ready to give you expert help in cutting costs. Phone him today for an on-the-spot study of your operations. Write for free catalog to: THE VAN DORN ELECTRIC TOOL Co., 764 Joppa Road, Towson 4, Md.

For Power Specify "Van Dorn" Portable Electric TOOLS

Div. of Black & Decker Mfg. Co.

ESNA's revolutionary new fastening device

—Replaces Tapered Pins...Grooved Pins...

Why? How?

BECAUSE ROLLPINS ARE:

- . . . CHEAPER TO INSTALL
- . . . LIGHTER IN WEIGHT
- . . . VIBRATION-PROOF
- . . . RE-USEABLE

Rollpins are a new-type, pressed-fit fastener. Chamfered ends permit fast, easy insertion of Rollpins with the use of either hand tools or automatic jig assemblies. Compressed as they are driven into place, Rollpins exert constant pressure against the hole walls—stay permanently in place until deliberately removed with a drift or pin punch.

. . . AND THE INGENIOUS SLOTTED CYLINDRICAL DESIGN ASSURES . . .

- Reduced wear on parts assembled.
- Minimum shear strength exceeding cold rolled pins of equal diameters . . . and an overall reduction in weight of assembled unit.
- Lowered production costs through elimination of reaming and peening operations . . . because Rollpins are self-locking within the tolerance spread of standard production drilled holes.

Rollpins are made from either Carbon Steel or Stainless Steel (also from Beryllium Copper on special order) . . . and are readily available from stock in sizes (diameters) from 5/64 to 1/2 inch and in standard lengths. For full information and test samples, fill in and mail the coupon at right today.

SIMPLIFIED VIBRATION-PROOF ASSEMBLIES • REDUCED WEIGHT

Want Additional Product Information? See Page 19.

the All-Purpose Fastener that will NOT Shake Loose

...the Rollpin

Straight Pins



1. Easy to drive in pre-drilled hole.
2. Compresses as driven.
3. Locks permanently in place.
4. Easy to deliberately remove.

ROLLPIN

A PRODUCT OF

ELASTIC STOP NUT CORPORATION OF AMERICA

FOR COMPLETE DATA ON ROLLPINS . . . AND ROLLPIN TEST SAMPLES

Mail this coupon NOW!

Elastic Stop Nut Corporation of America
2330 Vauxhall Road, Union, N. J.

Please send me full data on your new Rollpin, together with test samples for hole size _____ Pin length _____

Name_____

Firm_____

Address_____

City_____ Zone_____ State_____

REUSEABILITY • LOWERED COST

Dependable
FIRE PROTECTION...

STARTS WITH
ANSUL
water-tight
CONSTRUCTION



CUTAWAY VIEW, ANSUL MODEL 20-B

The new, improved Ansul Model "B" Extinguishers have the greatest fire-killing ratings* ever attained by hand portable fire extinguishers. In addition, WATER-TIGHT CONSTRUCTION, (exclusive with ANSUL) has resulted in far greater dependability than any other dry chemical extinguisher.

In fire protection equipment, the best is none too good. Accordingly, Ansul engineers conduct continuing research for improving Ansul Extinguishers and Dry Chemical. Ansul Quality has set a high standard for newcomers in the dry chemical fire extinguisher field. This unparalleled standard of quality is constantly being raised by Ansul research and development.



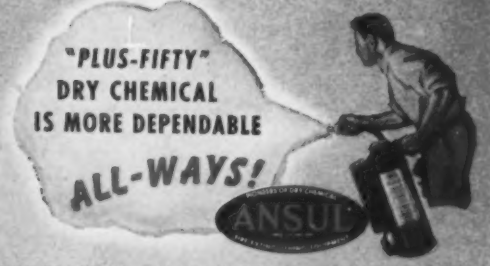
Send for File No. 610. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

*Factory Mutual Laboratory Reports of Examinations and Tests.

Exclusive Features

- Patented Nozzle assures most effective stream pattern . . . Best results by inexperienced operators.
- Special packings in Nozzle and other parts exclude water.
- Corrosion resistant construction throughout.
- Easy on-the-spot Recharging (No tools needed).
- Quick, *positive* puncture operation.
- Special cartridge guard protects cartridge . . . rugged construction throughout.
- Ansul *"PLUS-FIFTY"* Dry Chemical used exclusively.
- Field tested by thousands of satisfied customers.

ANSUL
CHEMICAL COMPANY
FIRE EXTINGUISHER DIVISION
MARINETTE • WISCONSIN
DISTRIBUTORS
IN ALL PRINCIPAL CITIES IN THE U. S. A., CANADA AND OTHER COUNTRIES



THIS TRADE MARK ASSURES YOU OF QUALITY PRODUCTS

(*Continued from page* 152)

says cuts inventory and purchasing costs. Locking power is positive, as there are no parts to cant or fall off. Fastening is neater (flush with surface) and safer (no protrusions to catch fingers or clothes). Literature available.

No. 123—For further information see page 19

Pipe Threader



A jam-proof pipe-threader, the Ridgid 65R Self-Contained Threader, is a new product of The Ridge Tool Co., Elyria, O. Ridge says this long awaited improvement means that the threader need not be watched while threading pipe by hand or power because a new design drive plate automatically kicks out the driving ratchet pawl when standard length thread is cut. The lead screw therefore cannot jam on the workholder. Also available is the new jam-proof drive plate which can easily be put into present 65R threaders in place of the old drive plate. The threader otherwise remains unchanged—it threads 1″ to 2″ pipe with one set of high-speed steel dies, and sets to pipe size in a few seconds.

No. 124—For further information see page 19

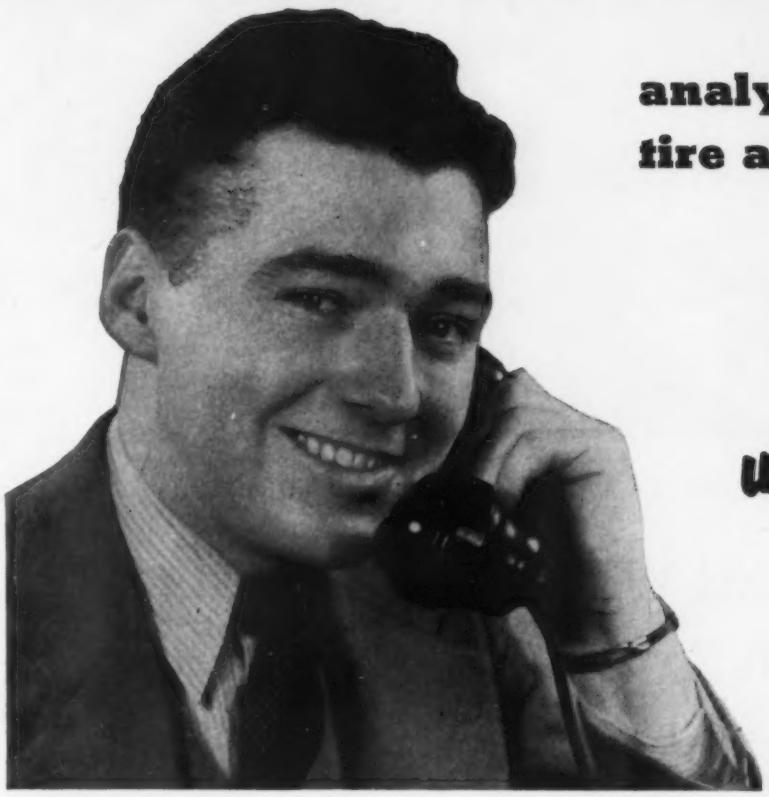
Magnetic Latch

A magnetic latch that operates efficiently on both wood and metal cabinet doors, even when the door becomes warped or out of alignment, is being marketed by Laboratory Equipment Corp., St. Joseph, Mich. Known as the Leco-Latch, it has no moving parts, no springs to oil, and nothing to wear out. The small but powerful magnet lasts forever, the company states. A complete unit consists of the magnet, a small plate made of special steel, and necessary screws. It has a harmonizing polished metal finish. Doors are held in place firmly, but gently, by the unit, and open easily without snap, noise or jerk.

No. 125—For further information see page 19

(*Please turn to page* 158)

B.F. Goodrich



Let this man analyze your industrial tire and wheel problems

He's impartial—unbiased—because he has the ONLY COMPLETE LINE

TIRE AND WHEEL

ANALYSIS PLAN will cut your costs

Here's how you can save up to half of your industrial tire and wheel costs. The local B. F. Goodrich man who specializes in such service will, without obligation, survey your operation, study loads, hauls, equipment, floors and hauling surfaces. He will then recommend the best type, size, tread and compound for your work. He will make suggestions on tire care and maintenance.

His recommendations are impartial because only B. F. Goodrich offers a *complete* range of types, tread designs and compounds. BFG's complete line of industrial tires includes pneumatics, puncture-sealing inner tubes, solids (all types) and Zero-Pressure semi-pneumatics. There's a wide choice of tread designs and a choice between 7 different tread rubber compounds including the famous oil-proof compound.

Now, more than ever before, the TW Analysis Plan will give you immediate cost savings—improved efficiency.

Mail the coupon for full details at no obligation. A SIMILAR PROGRAM IS NOW READY FOR MANUFACTURERS OF INDUSTRIAL HAULING EQUIPMENT.



The B. F. Goodrich Co.
Department TW-71
Akron, Ohio

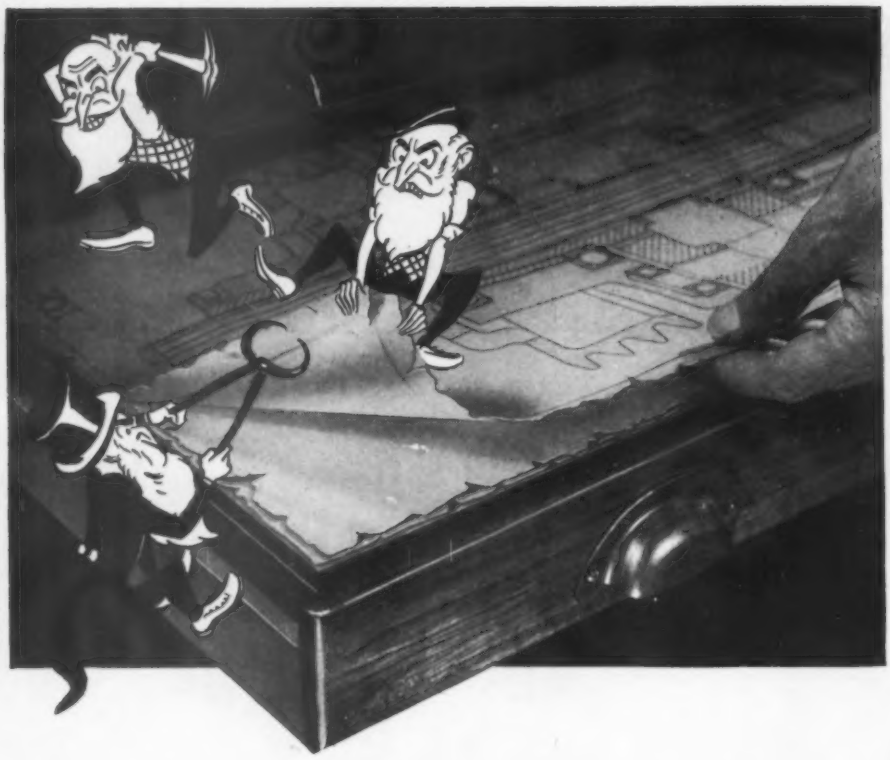
Please give me additional information on your Tire and Wheel Analysis plan.

Name_____

Title_____

Company_____

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For Drawings That Won't Get 'EDGY' With Age...

Specify Arkwright Tracing Cloth! Then you can be sure that no matter how often a master drawing is yanked out of the cabinet, it will never become ripped, or paper-frayed around the edges to spoil your work.

Arkwright Tracing Cloth is the best insurance you can get that your drawings will never go brittle, discolor or become opaque with age. Best insurance, too, that original drawings are always sharp, clean and ghost-free. Erasures on Arkwright cloth re-ink without feathering. And every roll is carefully inspected for pinholes, thick threads or imperfections of any kind.

All good reasons for you to remember: if a drawing is worth saving, put it on Arkwright Tracing Cloth. Would you like a sample? Write Arkwright Finishing Company, Providence, R. I.



ARKWRIGHT
Tracing Cloths

AMERICA'S STANDARD FOR OVER 25 YEARS

Vibration Absorber



Damaging effects of pipe line noise and vibration in installations handling liquids, compressed air, or gases, are the target of a new unit, the Soundzorber, announced by Finn & Co., 2850 Eighth Ave., New York 30, N. Y. The unit is a specially constructed rubber pipe used as a flexible connection between the pump and the water line. Standard flanges on each end of the pipe are imbedded in the rubber. Installation is said to be easy, and gaskets are not necessary. There is no metal-to-metal contact between the pump and piping system. The unit is designed for working pressures up to 250 lbs. per sq. inch, with a 5 to 1 safety factor.

No. 126—For further information see page 19

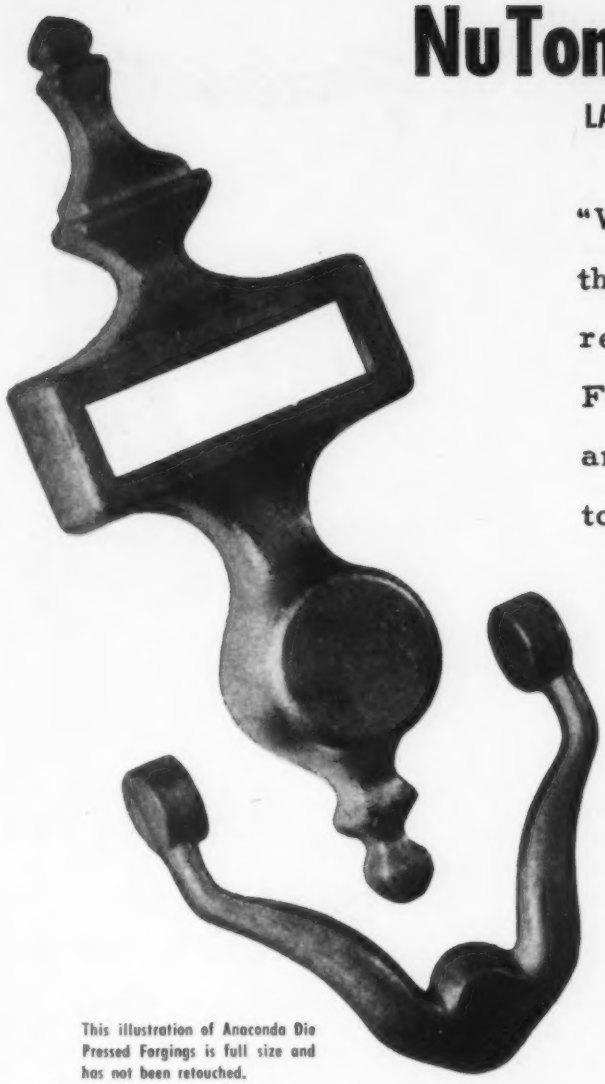
Drum Pumps



Two new heavy duty drum pumps, for use with 400-lb. drums, have been added to the line of Lincoln Engineering Co., 5783 Natural Bridge Ave., St. Louis 20, Mo. Model No. 1761 for bung-opening drums and No. 1766 for full open drums are air-motor operated. Lincoln says they provide a fast, economical means of pumping lubri-

(*Please turn to page* 160)

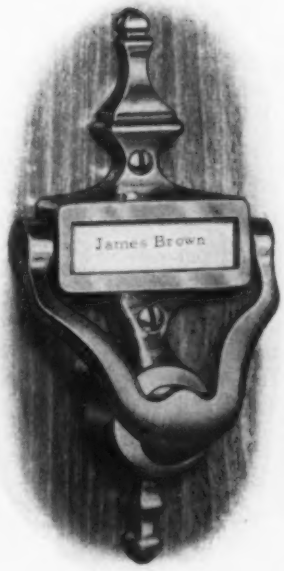
NuTone, Inc., OF CINCINNATI, ONE OF THE WORLD'S LARGEST MANUFACTURERS OF DOOR CHIMES, SAYS:



This illustration of Anaconda Die Pressed Forgings is full size and has not been retouched.

"When we used brass sand castings for these parts, long and costly buffing was required. But these Die Pressed Brass Forgings changed all that. They are amazingly easy to machine ... and polish to a high gloss with a minimum of buffing".

You'll hear the same story wherever a comparison is made. That's because Anaconda Die Pressed Forgings are solid, dense-grained, twice-wrought metal—with double the strength of ordinary sand castings. Forged in dies, they have die-like dimensional accuracy, die-like surface texture that minimizes finishing costs. Publication B-9 goes into detail, telling how, when, why and where. Write for your copy today. Address, The American Brass Company, General Offices, Waterbury 20, Conn., in Canada, New Toronto, Ontario. 50102



NuTone Solid Brass Door Knocker using the two Die Pressed Forgings illustrated above.



NuTone Electric Push Button using same face plate and requiring only a drilled hole in the cored boss and a brass-faced push button.



NuTone Mechanical Door Chime. Same face plate forging is used here, too. The pull and release knob is also a Die Pressed Forging with depressed lettering. Tone-bar and practically all other "behind the door" parts are made of Anaconda Brass.

ANACONDA®

DIE PRESSED FORGINGS

An ounce of prevention

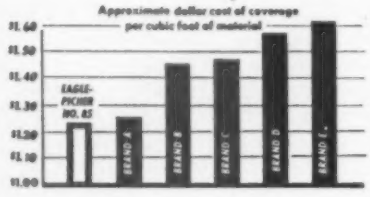
EAGLE-PICHER INDUSTRIAL FLOOR DRY NO.85

is worth a pound of cure

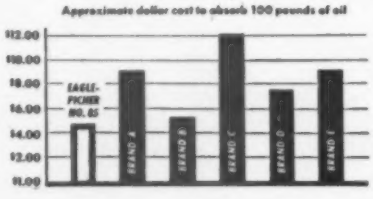
Eagle-Picher Industrial Floor Dry No. 85 is a granular mineral compound—chemically inert, non-combustible, and insoluble in oil, grease, kerosene or water. It can give you positive reduction in operating costs plus greater safety. Write for complete information.

Here's proof that Eagle-Picher Floor Dry No. 85 is tops in efficiency, economy

Comparative Coverage Costs



Comparative Absorption Costs



Packed in convenient 50-pound, multi-wall Kraft paper bags

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The Eagle-Picher Company
Department P-10-50
Cincinnati (1), Ohio
Gentlemen: Please send me complete information about Eagle-Picher Industrial Floor Dry No. 85.

EAGLE EP PICHER

*Name*_____

*Address*_____

*City*_____ *County*_____ *State*_____

(*Continued from page* 158)

cants, sealing compounds, and other semifluid or viscous materials directly from original 400-lb. refinery drums where abnormally low air pressures are requied. Pumps can be installed so as to deliver lubricant or other materials through pipe lines to conveniently placed outlets remote from the central source. If entire output of pump is required at one place, a hose assembly can be attached directly to the pump outlet. Bulletin 631 available.

No. 127—For further information see page 19

Torque Converter



Revco, Inc., Thorpe Bldg., Minneapolis, Minn., has announced a new model of the Zero-Max variable speed torque converter, Model 142X, for use with motors from 1/15 hp to ¼ hp. It has a torque rating of 20 inch pounds, provides full torque conversion at all speeds and infinitely variable speed from 0 to ¼ the input motor speed. Revco says the full torque conversion feature makes possible the use of smaller, lower cost single speed electric motors. Overall dimensions are 5″ long, 3½″ high and 4″ deep. Weight with case is only 3¾ lbs.

No. 128—For further information see page 19

Cleaner-Sanitizer

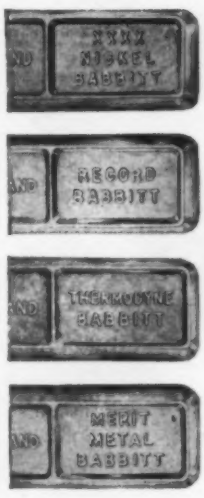
Mixing of disinfectants and detergents for use on toilets, sinks, washroom floors, etc., is eliminated by a new cleaner-sanitizer, according to its maker, Sugar Beet Products Co., Saginaw, Mich. Known as Formula SBS-50, the product does two jobs in one—sanitizes as it cleans. Chemical action does the work. The company says reports showing as much as 50% saving in cleaning labor have been made. The product is guaranteed to reduce bacterial counts of casual contaminants to safe levels as judged by public health requirements. Literature available.

No. 129—For further information see page 19

(*Please turn to page* 164)

Federated

BIG 4



BABBITTS

. . . For Every Bearing Need

White metal bearing problems can be successfully solved almost invariably by using one of the Federated Big 4 Babbitts — Thermodyne, Record, XXXX Nickel, and Merit Metal.

XXXX Nickel and Thermodyne are tough, dense-grained tin-base babbitts for heavy bearing loads at high speed operation.

Merit and Record are ductile, low-cost lead-base babbitts for lighter loads at more moderate speeds.

The Federated Big 4 branded babbitts are scientifically designed to answer most white metal bearing needs, and thus to simplify your purchasing problems. For special requirements, alloys of any composition can be supplied.

To order, or to obtain more information, call or write the nearest of Federated's 11 plants and 25 sales offices across the nation.

Federated Metals Division

AMERICAN SMELTING AND REFINING CO.

GREAT IDEAS OF WESTERN MAN . . . ONE OF A SERIES



Jean Jacques Rousseau on education for citizenship

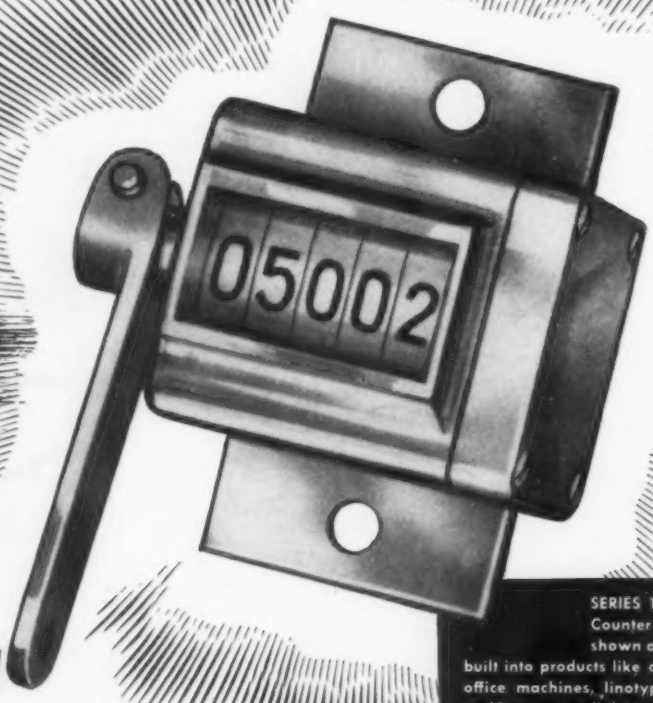
There can be no patriotism without liberty, no liberty without virtue, no virtue without citizens; create citizens, and you have everything you need; without them, you will have nothing but debased slaves, from the rulers of the State downwards. To form citizens is not the work of a day; and in order to have men it is necessary to educate them when they are children.



CONTAINER CORPORATION OF AMERICA

Turn Your "DIVINING ROD" on Your Own Product





SERIES 1145 Small Square Case Counter (Rotary Ratchet type) shown about twice actual size... built into products like cameras, coin machines, office machines, linotypes, postage machines, parking meters, light machine tools. One of the scores of basic types of electrical and mechanical counters shown in free 8-page "CounT-BooK" shown below. Write for a copy.

...you may find NEW SALES welling up from a hidden COUNT-Ability

As the pioneers searched for water with an educated witch-hazel switch . . . so turn your own mathematical mind on this million-dollar question:

"Would My Product Be More Useful To My Customers . . . If It Could Count?"

Call a Veeder-Root engineer and let him help you answer that question. Then, if the answer is favorable, he will *build-in* a Veeder-Root Counter as an integral part of your product . . . to build more sales than you ever counted on before. Look up the nearest V-R office in your Classified Directory — or call the main office: Hartford 7-7204.



Free Book ←

Veeder-Root COUNTERS "Count Anything on Earth"

VEEDER-ROOT INC., HARTFORD 2, CONN.

In Canada: Veeder-Root of Canada, Ltd., 955 St. James Street, Montreal 3.
In Great Britain: Veeder-Root Ltd., Kilspindie Rd., Dundee, Scotland.



Smooth-running as a fine watch, this fishing reel is one more in the never-ending list of products made of Republic ENDURO *Free-Machining* Stainless Steel.

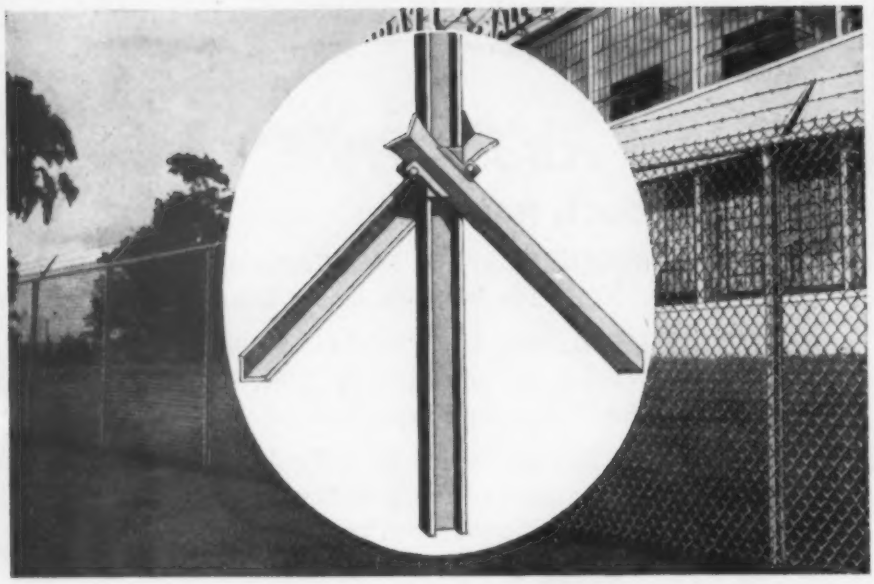
Here, again, the unsurpassed corrosion-resistance of stainless steel is coupled with the accuracy of section, smooth surface finish and UNIFORM MACHINABILITY which result from Republic's Union Drawn process of cold finishing. And another manufacturer builds highest quality into his product—at a cost which permits him to be competitive.

Free-Machining ENDURO Cold Finished Bars, as well as hot rolled bars and wire, are available for immediate delivery. Write today for specific information and prices.

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Republic **ENDURO** REPUBLIC STEEL
FREE-MACHINING
STAINLESS STEEL

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



Here's why ANCHOR FENCE gives you *Permanent Plant Protection*

Deep-Driven Anchors — an Anchor Fence *Exclusive* — hold the fence *permanently* erect and in line in any soil, in any weather. Anchor Fence can never sag, shift or become loose to allow easy access to snoopers, trouble-makers, agitators or other dangerous trespassers. Your plant is *safe* with an Anchor Chain Link Fence on guard!



PROTECTS OUTDOOR STORAGE OF MATERIALS...
Anchor Fence helps you make full use of outdoor storage space with utmost safety . . . frees factory space for production.



HELPS CONTROL PLANT TRAFFIC . . . *Anchor Chain Link Fence and Gates help you direct foot and motor traffic more efficiently, give you better control over production, shipping and receiving operations.*

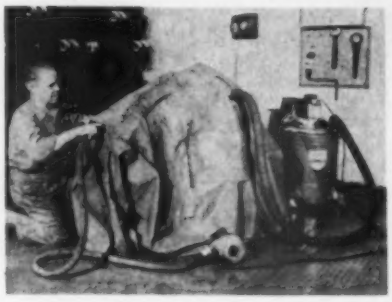
Anchor's Square Frame Gates provide additional strength, resist sagging and warping to an amazing degree... H-Beam Line Posts of carbon steel are rigid and rust-free because their open construction is self-draining . . . Square Terminal Posts increase strength and durability, and improve appearance!

For additional information on Anchor Fence... diagrams, fencing ideas, photographs of well-known installations . . . send for our factual Industrial Fence Catalog. Or ask for one of our experienced engineers to call and give you the benefit of his knowledge in solving your plant protection problems. Write: ANCHOR POST PRODUCTS, INC., *Industrial Fence Div.*, 6615 Eastern Ave., Baltimore 24, Maryland.

Anchor Fence

Nation-wide Sales and Erecting Service

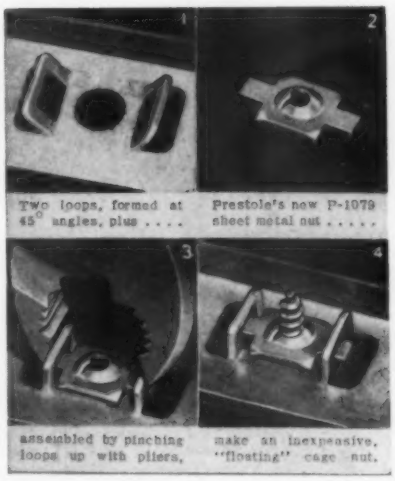
Motor Generator Cleaning



Carbon and copper dust need no longer be blown over every piece of equipment in the elevator machine room during motor generator cleaning, according to Lehara Sales Corp., 485 Fifth Ave., New York 17, N. Y. Inefficiencies of old processes have been completely eliminated, Lehara says, by its new "Blo-Vac" cover, which is patterned to fit all Otis type motor generators from No. 1 to No. 5 inclusive, and similar sizes of other makes. Fifteen strategically located two-way zippers are opened individually only where blower is inserted or where suction bell intake on end of vacuum hose fits into cover. Blowing and vacuuming simultaneously proceeds to clean out dust and collect it in vacuum tank.

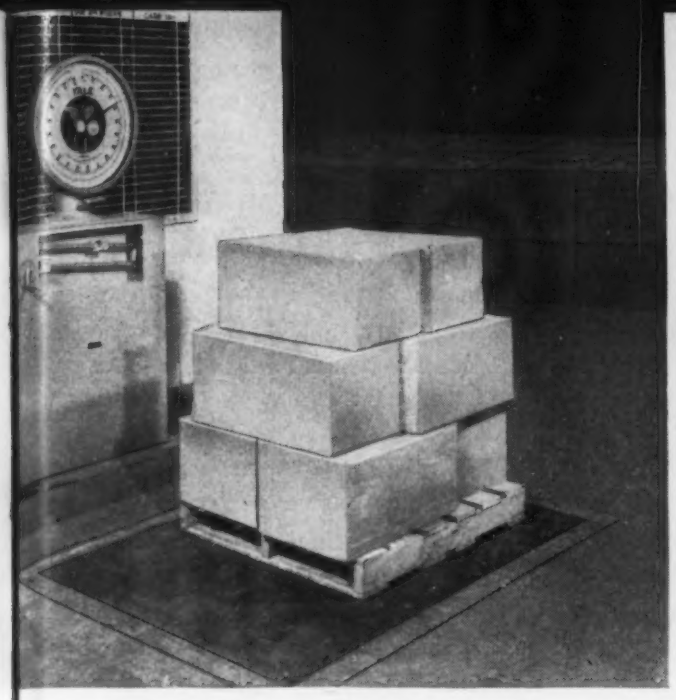
No. 130—For further information see page 19

Cage Nut



Prestole Corporation, 1333 Miami St., Toledo, O., has a new cage nut, the P-1079, that doesn't require a separate cage. Why, then, it asks, spot weld a cage for any floating nut, or buy expensive spring steel nut retainers that snap or lock in place —when you can punch the cage right in the sheet metal as a nut holder. It means savings in metal, handling separate cages, and spot welding. As shown above, the nut is quickly locked in place because the loops are

(*Please turn to page* 168)





UT HIGH COSTS...

YALE HANDLES MORE FOR LESS

Making is mostly moving. That's why maximum production economy can only be achieved with efficient tools to lift, transport, stack, and weigh materials.

Yale Material Handling Machinery is functionally designed to handle more for less. Thousands of companies are operating with vastly improved man-hour productivity and lower costs because of the speed and effort-saving efficiency of Yale tools.

Time is money. Get the most out of *your* production dollars. Put Yale Material Handling Machinery to work in *your* plant. Our nearby representative will gladly demonstrate how correct selection and application can cut costs substantially. Make a date. Phone or write today.

THE YALE & TOWNE MANUFACTURING COMPANY

Philadelphia Division — DEPT. L-194 — Philadelphia 15, Pa.

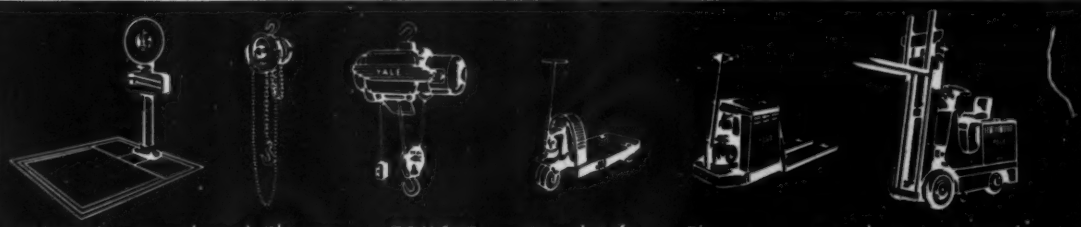






YALE

TOOLS THAT KEEP INDUSTRY "ON THE MOVE"



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HELPING YOUR SKF DISTRIBUTOR KNOW BEARINGS BETTER

Your SKF Bearing Distributor wants to see that you get the best anti-friction bearing advice that's possible. SKF has developed a program to help your Distributor's men to help make themselves the *best-trained anti-friction specialists in your territory.* Your SKF Distributor's men are receiving, right now, a series of practical, down-to-earth folders—a refresher course that will make them worth more to you because they will know more about your friction problems. So—when you need replacement bearings, your SKF Distributor is *your* man. Let him show you how he is co-operating with us to give you even better service, with better-trained bearing men than ever before.

SKF
BALL AND ROLLER BEARINGS



8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

- INTEGRITY
- CRAFTSMANSHIP
- METALLURGY
- TOLERANCE CONTROL
- SURFACE FINISH
- PRODUCT UNIFORMITY
- ENGINEERING SERVICE
- FIELD SERVICE



LET YOUR SKF DISTRIBUTOR
SHOW YOU HOW HE'S
"GOING BACK TO SCHOOL"



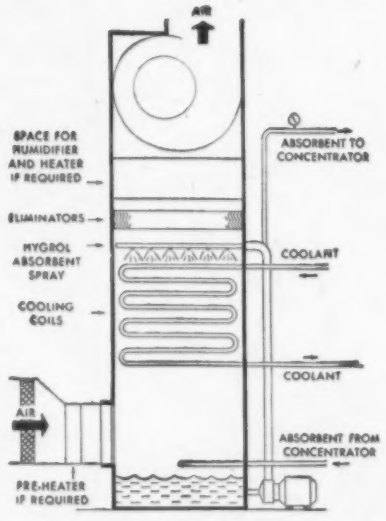
Your SKF Distributor has a folder which tells you WHY and HOW he is trying to be WORTH MORE to you by KNOWING MORE about anti-friction bearings. Remember, your SKF Distributor is the man to call—you'll profit from better solutions to your friction problems. SKF INDUSTRIES, INC., PHILADELPHIA 32, PA., *the Pioneers of the Deep Groove Ball Bearing, Spherical Roller Bearing, Self-Aligning Ball Bearing.* 7132

How You Save with the NEW Niagara Method of Air Conditioning

Using "Hygrol" Hygienic Absorbent Liquid

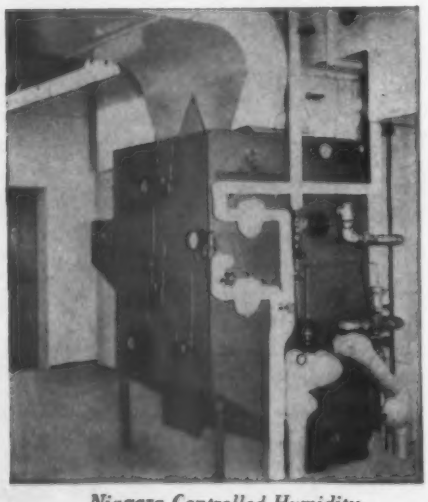
Because it absorbs moisture from the air directly, the new Niagara Controlled Humidity Method uses less, or no, mechanical refrigeration for dehumidifying. You save first costs and installing of heavy machinery. You save space, maintenance expense, power. You get easier, more convenient operation.

Using "Hygrol" hygienic absorbent liquid, this method gives complete control of temperature and relative humidity. Especially, it is a better way to obtain dry air for drying processes, packaging hygroscopic materials, preventing moisture damage to metals, and obtaining better quality for chemical process products and food products—or in obtaining better results in comfort air conditioning for office or laboratory at lower refrigeration costs.



NIAGARA CONTROLLED HUMIDITY METHOD — FLOW DIAGRAM


Food Packaging under Controlled Humidity


Niagara Controlled Humidity Air Conditioner

The diagram shows how filtered air is dehumidified by passing thru a spray of "Hygrol"—a liquid absorbent which removes air-borne moisture. This liquid is hygienic and non-corrosive; it contains no salts or solids to precipitate and cause maintenance troubles. It is continuously re-concentrated at the same rate at which it absorbs moisture, providing always the full capacity of the air conditioner, automatically.

Units provide a range of capacities from 1000 to 20,000 C. F. M. Multiple unit installations are in use successfully. Records of results are available. For further information, write Niagara Blower Co., Dept. PU, 405 Lexington Ave., New York 17, N. Y.

(*Continued from page* 164)

already formed up at a 45° angle. That makes the pliers' "pinch-in" job on the assembly line about as fast as slipping on ordinary washers. The nut is produced to fit almost all popular sizes of sheet metal screws. Additional details are available.

No. 131—For further information see page 19

Nut Driving Machine



Detroit Power Screwdriver Company, 2811 Fort St., Detroit, Mich., has brought out a new machine it says will drive nuts automatically or semi-automatically. It entirely eliminates the manual handling of nuts at any time, except in loading the rotary barrel type hopper periodically. The hopper keeps the machine charged with nuts and feeds them in a prepositioned manner to the driving spindle. The operator handles only the parts to be assembled by placing the assembly in the locating fixture mounted on the work table of the machine. The machine will handle nuts from 5/16" minimum to 11/16" maximum across flats. Equally efficient for special nuts such as jam, castellated, lock, etc.

No. 132—For further information see page 19

Flute Miller

The No. 90FM hydromatic flute miller is a new hydraulically operated machine that indexes and mills straight or spiral flutes in tools such as counterbores, countersinks, taps and reamers, spiral or straight milling cutters, end mills, or any other special work requiring a dividing head. It is made by The Wardwell Manufacturing Co., 3167 Fulton Road, Cleveland 9, O. It will take taps, reamers, counterbores or any small cutting tools from 1/8" to 4" diameter; spacing from 2 to 40 flutes.

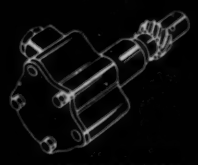
No. 133—For further information see page 19

(*Please turn to page* 170)



HIGH PRESSURE

EATON

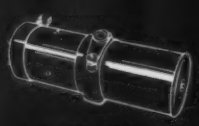


LUBRICATING

High Production Facilities for the Manufacture of Hydraulic Pumps are at the Service of Producers of Military Equipment

★ ★ ★

Our engineers will be glad to consult with you on hydraulic pump problems



HYDRAULIC POWER UNITS



FUEL TRANSFER



SERVO STEERING



CONVERTER SUPPLY





TRANSMISSION SERVO



LUBRICATING AND SCAVENGING

EATON MANUFACTURING COMPANY

GENERAL OFFICES: CLEVELAND, OHIO

Pump Division

9771 FRENCH ROAD • DETROIT 13, MICHIGAN



This newest Allen ⬡ Head product, made of Allenoy steel, meets all the demands of a dryseal plug in applications involving extreme pressure, such as in refrigeration and hydraulic equipment. For use with dryseal taps. No sealing compound required.

It stands up under repeated wrenching as no plug has before. Its Pressur-Formd socket, unweakened by drilling and broaching, is so strong the key will shear before the socket strips.

Pressur-Formd threading insures metal-to-metal contact all the way by producing burnished threads. This method prevents distortion and nicked, imperfect threads which gouge softer metals and impair the seal.

Accurate fit is assured by 360° roundness, and by a perfect taper, at both the pitch and crest diameters.

Here's positive protection against the high cost of leaky or faulty pipe plugs. Get "Tru-Round" Dryseal Pipe Plugs by ordering genuine Allens in the distinctive black and silver box.

Now available in sizes from 1/16" to 1¼". No increase in price. Write us for samples and engineering data.



FOR NORMAL APPLICATIONS Our "Tru-Round" standard pipe plug, also Pressur-Formd, is leakproof, and a sealing compound is not ordinarily needed for pressure-tight joints. Precise roundness and smoother threads make for better seal. Threaded strictly in accordance with Army-Navy Aeronautical Specification AN-P-363. Fully guaranteed.

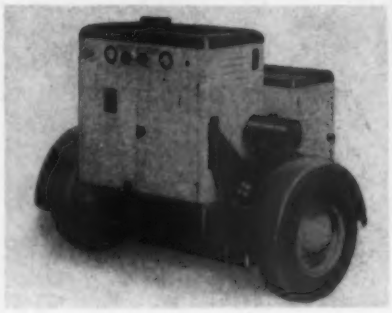


ALLEN MANUFACTURING COMPANY
Hartford 2, Connecticut, U. S. A.
NEW YORK, CLEVELAND, DETROIT, CHICAGO, LOS ANGELES

ALLEN HEAD

ALLEN . . . . . FOR 40 YEARS THE BUY-WORD FOR SOCKET SCREWS.

Steam Cleaner



For those cleaning jobs where water, gas, or electric connections are not available, Clayton Mfg. Co., El Monte, Calif., offers a new gasoline engine powered steam cleaner for industrial, agricultural, and transportation uses. Two models are being built: Model A, with a 120-gallon capacity, and Model AR, which combines in one unit a steam cleaner of 150-gallon capacity and a high-pressure rinse unit of 275 gallons per hour. Both models are available in stationary, portable, or trailer types. All units are oil fired and equipped with a 2 hp. gasoline engine. On the trailer types, a 75-gallon water tank may be substituted for the tool box (shown above). Performance is said to be comparable to the company's 10 standard electric oil and gas-fired Kerrick machines.

No. 134—For further information see page 19

Also Noted . . .

As a more efficient, economical method of handling touch-up paint jobs, Plasti-Kote, Inc., 425 Lakeside Ave. NW, Cleveland, O., is offering manufacturers **paint in pressurized 12-oz. Aerosol cans** made up to their color specifications.

No. 135—For further information see page 19

A new liquid which **prevents fogging of glass** and transparent plastic in humid atmospheres and at low temperatures is made by Master, 4444 Brooklyn Ave., Los Angeles 22, Calif. A single application is said to have prevented fogging for more than 3 weeks.

No. 136—For further information see page 19

Hanson - Van Winkle - Munning Co., Matawan, N. J. says it is the only one offering **extruded zinc anodes,** either as cylinders for ball anode containers, or in any desired length in elliptical form. Corrosion characteristics are said to be considerably improved and the metal structure more dense.

No. 137—For further information see page 19

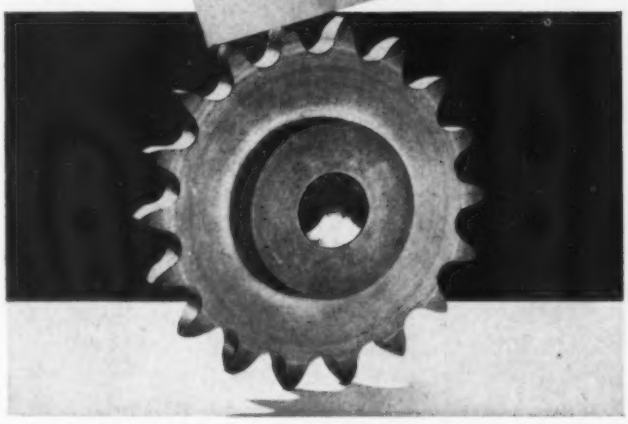
(*Please turn to page* 172)

MIDWAY BETWEEN HARD AND SOFT RUBBER

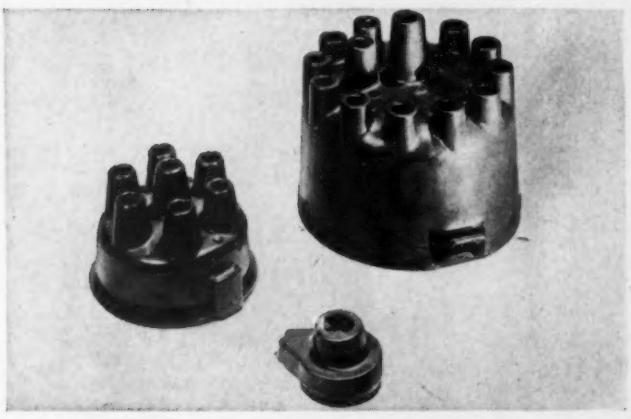
New thermosetting plastic, known as ENRUP, offers a flexibility *or* rigidity that rubber can't provide



BETWEEN THE EXTREME ELASTICITY of soft rubber (the strip at extreme left) and the rigidity of hard rubber (strip at extreme right) are 4 strips of ENRUP. Note varying degrees of flexibility, making ENRUP a true bridge between hard and soft rubber. It is about one-half the weight of aluminum.



SPROCKET MOLDED FROM ENRUP. Note the absence of metal bearing. This great new plastic has unusual abrasive resistance, can be molded to close tolerances, eliminating need for elaborate finishing operations. ENRUP can be machined.



TRUCK AND PASSENGER CAR distributor caps molded from ENRUP are tougher. The rotor in foreground is also longer wearing. ENRUP has *high impact strength* and a degree of *toughness* and *flexibility* heretofore lacking in the plastics field.

ENRUP IS FABRICATED AND MOLDED ENTIRELY BY U. S. RUBBER ENGINEERS

It is especially valuable on heavy-duty lathes, household appliances, plating barrels, and for dozens of other applications. Gears made of ENRUP, for example, have been operating for more than a year in applications where conventional metal gears have failed within a few weeks. CAN YOUR PRODUCT be improved by this versatile material? It has an adaptability that may mean increased success for your product. Write to:

A PRODUCT OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION, ROCKEFELLER CENTER, NEW YORK 20 N. Y.

Want Additional Product Information? See Page 19.



Save Money by Buying Your
SCREW MACHINE PARTS from KEMPSMITH

Now — You can get high-quality screw machine parts from a reliable manufacturer at a substantial saving. In the modern, well-equipped Kempsmith plant, you will find a battery of six spindle automatics from 9/16" to 3½" diameter and single spindle machines from 9/16" to 6¼" diameter. Also plenty of hobbing, splining, broaching and other second operation equipment. These high-speed, precision machines are available to YOU for producing your screw machine parts. They enable you to get costs down to meet competitive bids. All metals can be processed. Send us your blueprints. Our quotation will follow immediately.

KEMPSMITH MACHINE CO., 1863 S. 71st ST., MILWAUKEE 14, WIS., U. S. A.

KEMPSMITH

Supplying the Needs of Industry Since 1888

NOW for complete protection
FROM THE WET • GREASE • OILS • ORDINARY ACIDS

TOWER'S
FISH BRAND
***NEOPRENE**



These sturdy, durable, 100% DuPont **NEOPRENE** garments give that extra service to those who require protection from greases, oils, and most acids. There is a TOWER protective garment especially adaptable for every type of industrial activity. We will be glad to recommend the garment which best meets your individual requirements.



**A chemical rubber product of the DuPont Company*

For folder of styles and detailed information write Department PA.

NEOPRENE RUBBER

TOWER'S FISH BRAND — A. J. TOWER CO. — TOWER'S ARROW BRAND

24 SIMMONS ST. BOSTON, MASS.

United States Rubber Co., Rockefeller Center, New York 20, N. Y., has announced a new type of **stacking and nesting tote box** that is formed in one seamless piece from its Royalite thermoplastic material. The boxes are described as tough, occupying little space, very light in weight, easy to handle, and easy to clean.

No. 138—For further information see page 19

National "99" is a new **foam charge** made for special risks involving alcohol, ether, esters, acetone, and related solvents. The foam charge creates a foam that covers and snuffs out the flame in seconds. The thick blanket insulates threatened areas and prevents flashbacks. Made by National Foam System, West Chester, Pa.

No. 139—For further information see page 19

The Black & Decker Mfg. Co., Towson, Md., has come out with special **carbide-tipped blades** for its line of "Quick-Saw" portable electric saws. The blades are claimed to cut faster than abrasive discs when sawing Transite, Cemesto Board, Masonite Pressed Wood, Formica and other abrasive or plastic composition materials.

No. 140—For further information see page 19

Successful packaging for numerous products once bothersome or even impossible to handle has resulted from the use of Poly-Lok, a new **adhesive** for fabricating multiwall and specialty bags from polyethylene-coated kraft stocks, according to National Adhesives, 270 Madison Ave., New York 16, N. Y. It is a ready-to-use, cold "Resyn" seam adhesive that combines high solids with low viscosity.

No. 141—For further information see page 19

A **flexible hose,** constructed with a tube of compar, which is reported to give exceptional service with hot spray lacquers, is offered by Resistoflex Corp., Belleville 9, N. J. Compar is said to have outstanding resistance to the various strong solvents used in lacquers, synthetic coatings and enamels.

No. 142—For further information see page 19

Dual spotlights to eliminate shadows, and over/under terminals to brace tip and improve visibility are features of a new light-duty **soldering gun** announced by Weller Electric Corp., Easton, Pa. The model is smaller than previous 135 watt guns but has substantially greater soldering capacity.

No. 143—For further information see page 19

(*Please turn to page* 176)



What an Appliance Maker learned from an Automotive Specialist about DIE CASTING...

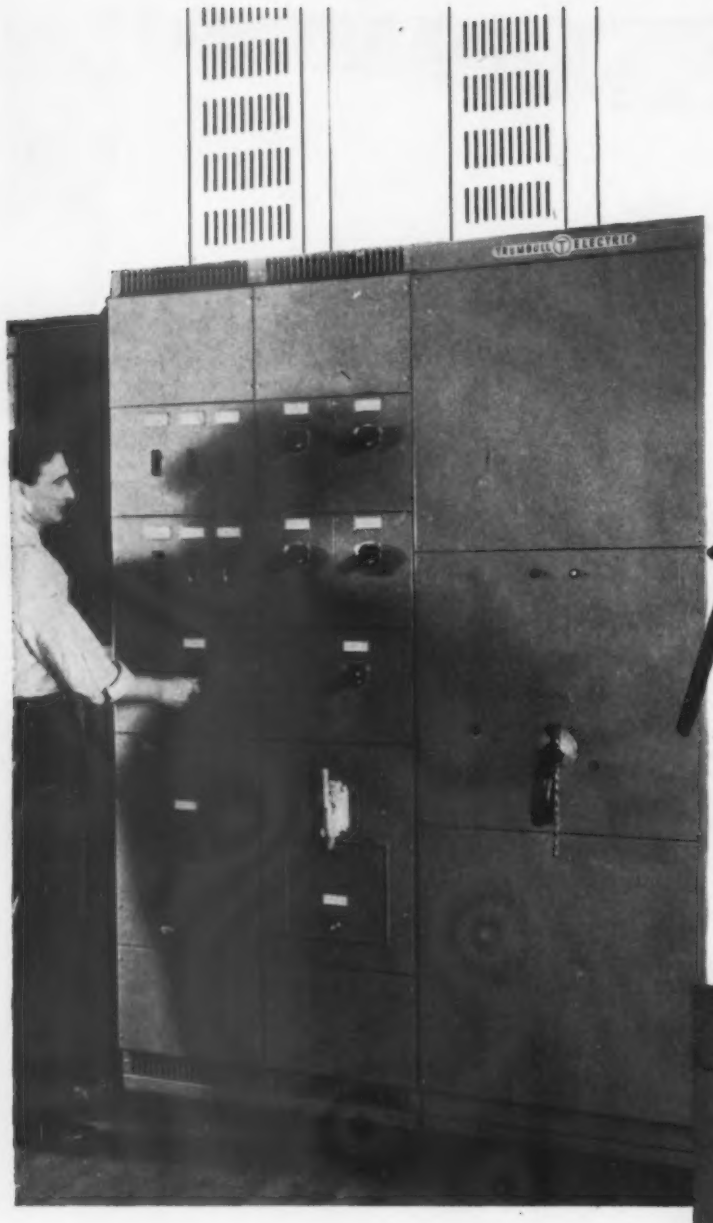
BUILDING appliances was an old story to a well-known manufacturer but he knew the reputation of the automotive industry for getting quality products at low cost. He figured that any firm with the know-how to serve the car-making industry might be able to show him ways to improve quality and save money doing it. So when a rather unusual die casting and plating requirement came up, he got in touch with the Auto-Lite Die Casting Division. The result was an improved casting and a saving in money, too.

If you have a die casting requirement in which quality or price is a problem, or if you need the help of Auto-Lite's famous design and engineering experts, write to

THE ELECTRIC AUTO-LITE COMPANY
Die Casting Division
• • •
Woodstock, Illinois
600 So. Michigan Ave., Chicago 5, Illinois
Lockland, Ohio
723 New Center Bldg., Detroit 2, Michigan

AUTO-LITE

die castings
plastics
wire and cable
industrial
thermometers



Announcing

Centr-A-Power

. . . custom-built . . . pre-engineered



New Features Save Floor Space, Speed Up Wiring, Facilitate Operation

LESS FLOOR SPACE NEEDED

Compact trough design allows more troughs to be used in a given area of floor space.

LOTS OF ROOM FOR WIRING

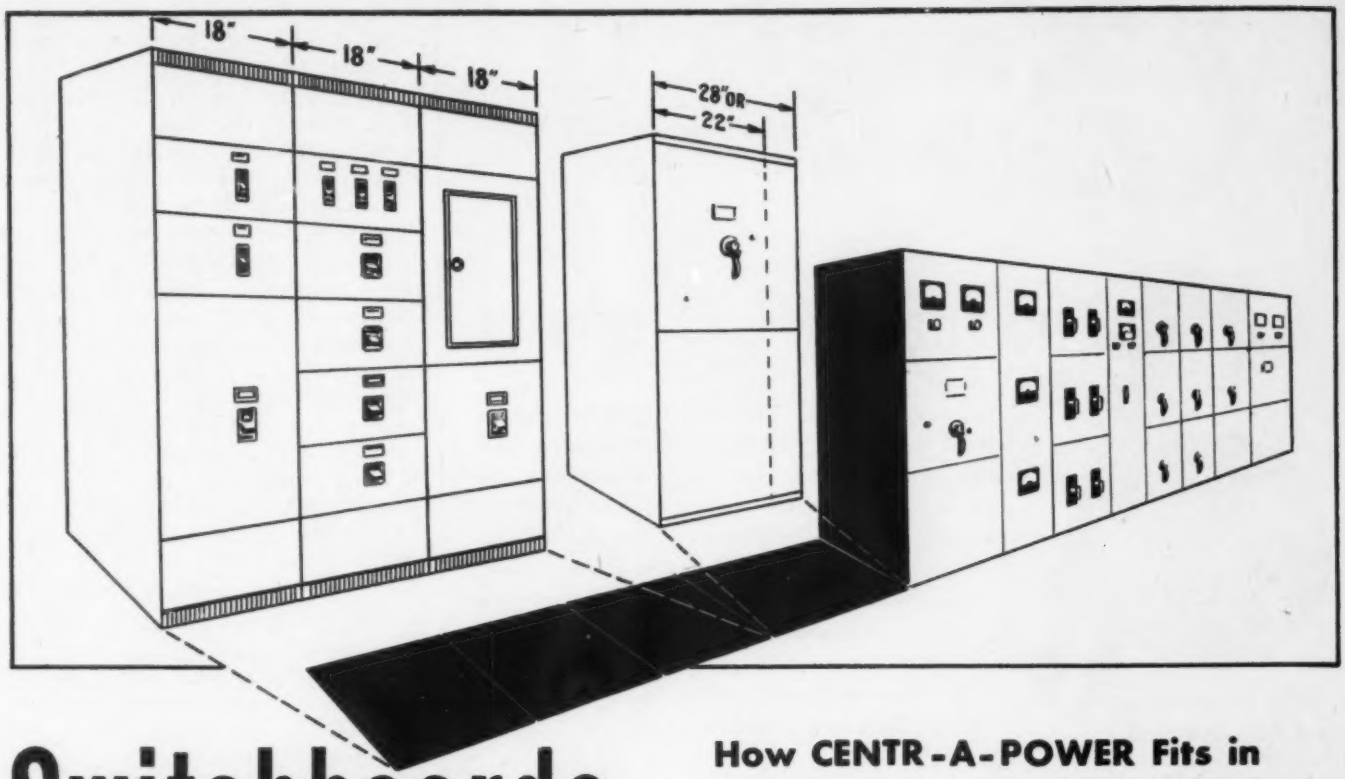
Generous (4 x 8 in.) wiring gutter makes wiring easier —can be accomplished with units in the trough—and allows use of over-size cable on long runs, keeping voltage drop low.

ACCESSIBLE FROM FRONT

CENTR-A-POWER Switchboards are completely accessible from the front, permitting aisle, back-to-back, "L" and "U" installations, further saving floor space.



TRUMBULL'S TRAINLOAD OF NEW PRODUCTS



Switchboards

. . . at money-saving prices

To save you money on installation time and maintenance costs, Trumbull has designed a new type of switchboard for complete low voltage (600 V and under) switching requirements. Because of pre-engineering and standardization, you can now have the highest quality construction at the lowest possible cost. Here are some of the features:

Pre-fabricated, rigid steel troughs can be placed in any arrangement to provide a completely dead-front, totally-enclosed switchboard. Wiring gutter design is such that load wiring is isolated from incoming load bus. Compact switch or breaker units, called CENTR-A-PLUGS, are easily mounted or removed. A quick-clip attachment saves time in installation, inspection and maintenance. Self-aligning latches replace bolts and nuts. Positive connection to bus bars is assured by use of spring-loaded, reinforced stabs. Each CENTR-A-POWER unit self-contained and electrically isolated from adjacent units.

How CENTR-A-POWER Fits in with Your Present Rigid Type Switchboard Equipment

CENTR-A-POWER is made from three standard troughs, all 90 in. high. At left is unit type CENTR-A-POWER with 18 in. trough; it handles fusible switches through 200 amp. and circuit breakers through 600 amp. Two standard section troughs are indicated in the center. Type A is 22 in. wide, handles 400 and 600 amp. fusible switches. Type B is 28 in. wide, handles fusible switches through 1200 amp. and circuit breakers through 1600 amp.

Unit-Type Troughs (18 in.) are furnished assembled or unassembled. Large standard sections are furnished assembled only.

ASK ABOUT TRUMBULL CENTR-A-POWER CONTROL CENTERS

which are of similar construction and line up mechanically and electrically with CENTR-A-POWER Switchboards.

New Free Bulletin—Address The Trumbull Electric Manufacturing Company, Plainville, Conn. Ask for Bulletin TEB-3.

TRUMBULL (T) ELECTRIC



TRUMBULL'S TRAINLOAD OF NEW PRODUCTS

Triple Threat to Production Problems

HOLTITE "TAP" SCREWS

U.S. Pat. No. 2,292,195 Other Patents Pending



Chips are actually cut from material.

This newest cost-cutting innovation eliminates tapping operations by actually tapping its own perfect mating threads in any material. The slot, corresponding to the flutes of a tap, provides two balanced cutting edges that actually remove material, and a chip reservoir that allows chips and cuttings to free themselves readily. Combining the cutting action of a tap with the economy of a screw this dual purpose fastening has solved innumerable production problems. Now available in 420 Stainless Steel, heat treated. Send for illustrated folder.

HOLTITE "LOCK-TITE" SCREWS

U.S. Pat. No. 2,224,491

As the lock washer is an integral part of the head, this economy fastening automatically eliminates lost time, waste and difficulties of handling separate lock washers. "Lock-Tite" screws are made to meet specific needs of user. Design of teeth, type of metal, hardening and tempering can be regulated to obtain the most efficient locking or binding action required for the application.





Unretouched photo shows progressive "locking bite" of washer teeth as screw is driven in. When setup, screw head is securely anchored in the material to effect a tighter, stronger, vibration-resisting fastening.

HOLTITE Lubricized

Reg. U.S. Pat. Off.

WOOD SCREWS · HANGER BOLTS
SHEET METAL SCREWS

The Holtite Lubricizing process produces a hard, transparant film on the screw surface which is converted into a highly efficient lubricant by friction-heat caused through driving. When cool, this lubricizing agent again solidifies setting the screw securely in the fibres of the wood. Eliminating time-wasting hand lubricants, this processing efficiently reduces binding and breaking when fastening in hard woods and in difficult applications.



CONTINENTAL SCREW CO.

New Bedford, Mass., U.S.A.

Tygon **flexible plastic tubing** is now available in giant bore sizes ranging from 1⅜" to 2½" O.D., according to The U. S. Stoneware Co., Akron, O. The tubing is a tough, translucent, non-toxic flexible hose for bulk handling of liquid food products, drugs and chemicals.

No. 144—For further information see page 19

A new lightweight **"rolatape"** is said to permit safe and accurate measurements of from a few inches to almost unlimited lengths, vertically, horizontally, or around curves, by a single individual. Recessed tape face on rim of wheel indicates measurement in fraction of inches up to 2 feet. Automatic counter clocks measurements in feet and in cycles of 100 feet. Made by Rolatape, Inc., Santa Monica, Calif.

No. 145—For further information see page 19

Marbro Mfg. Co., 1620 Lee Rd., Cleveland, O., has put on the market a small, compact **gas line tester,** called the Gauge Rite Air Test, said to weigh about 1/6 of most testers now used by inspectors, repairmen, etc. It tests gas leaks in ounces, claimed to be a more sensitive and accurate way of testing than by pounds.

No. 146—For further information see page 19

American Chemical Paint Co., Ambler, Pa. offers Touch-Up Granodine for use in **anchoring paint to cold-rolled steel** products, including new work or repaired surfaces of old work. It can be applied with brush, gun or sprayer. American says it forms a zinc phosphate coating comparable in protective quality to coatings produced on new products at the factory.

No. 147—For further information see page 19

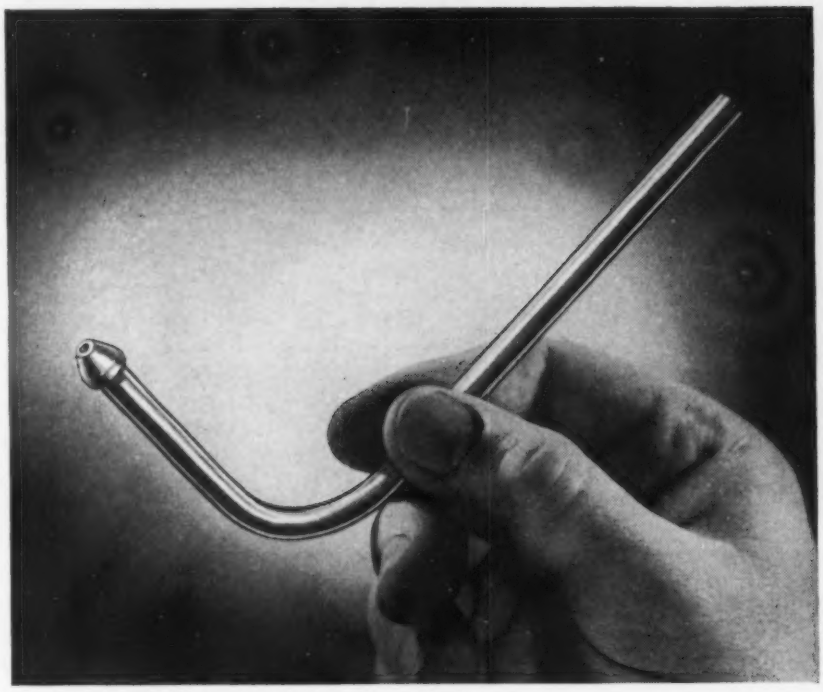
A new heavy-duty, adjustable **beam clamp** for suspending heaters, motor platforms, lighting fixtures, and many other types of overhead-mounted equipment, is a product of Thompson Electric Co., 1101-49 Power Ave., Cleveland, O. It is attached easily and will support loads up to 1500 lbs. Made of cast malleable iron, heavily cadmium plated.

No. 148—For further information see page 19

Stalwart Rubber Co., Bedford, O., can furnish gaskets, sleeves, washers, tubing and other molded, extruded, punched and lathe or die-cut **rubber parts** in quantity fabricated from the new Silicone 161 rubber compound. Because the new compound can be fabricated more easily and quickly than previous silicone rubbers, cost of production parts has been reduced.

No. 149—For further information see page 19

Fodder For 600 Horses Through This Small Tube



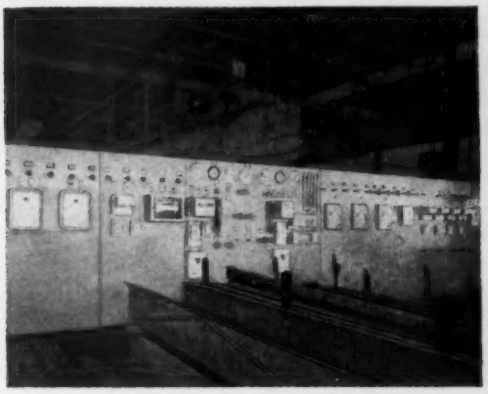
● Only .061" I.D., the tube is the picture of power. It delivers fuel to a combustion chamber in a 600 horsepower diesel engine, under pressures as high as 9 thousand pounds per square inch. Annealed dead soft for easy upsetting and bending and to stand-up to vibration without cracking, cold drawn to a smooth finish, inside and out, dimensionally controlled to .002" it is a good example of tubing technology at work . . . an illustration of Superior's know-how in tubing production.

You may not be interested in whipping vibration, finding a tube which is easy to work, or controlling high pressures—but if anywhere in your product you use fine, small tubing in any practical metal or analysis, you will be interested in the Superior story about research, production, engineering, testing and close-as-your-phone distribution.

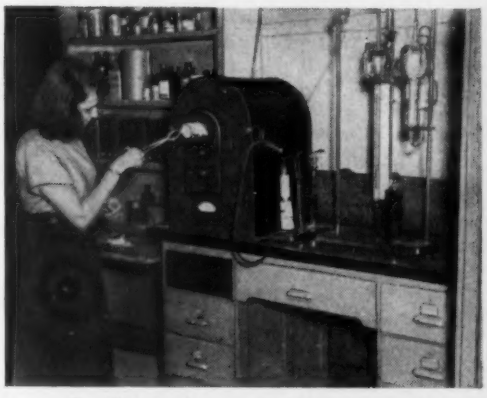
One of Superior's 55 distributors, with adequate stocks of standard analyses and sizes, is near you. For his name plus additional information about Superior tubing write today for Bulletin 31. Superior Tube Company, 2034 Germantown Avenue, Norristown, Pennsylvania.



To guard against contamination by processing lubricants, the tubing is thoroughly degreased before each annealing operation.



Bright annealing and heat treating furnaces, with full instrumentation for control and record, assure uniform structure, a clean, smooth surface, and precise temper tolerances.



Routine tests are made to determine the carbon content of both raw material and finished tube.

ROUND & SHAPED TUBING

(.010" to ⅝" O.D. Max. Certain Analyses .035" max. wall to 1⅜" O.D.)

Available in:

Carbon Steels:
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Alloy Steels:
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Stainless Steels:
A.I.S.I.—303, 304, 305, 309, 310, 316, 317, 321, 347, 403, 410, 420, 430, 446, T-5

Nickel Alloys:
Nickel, "D Nickel", "L Nickel", "Monel", "K Monel", "Inconel", "Nichrome V", 30% Cupro Nickel, 18% Nickel Silver, Beryllium Copper.

Superior
THE BIG NAME IN SMALL TUBING

All analyses .010" to ⅝" O.D.
Certain analyses (.035" max. wall) Up to 1⅜" O.D.

*Reg. U. S. Trade Mark—Superior Tube Company • West Coast: PACIFIC TUBE COMPANY, 5710 Smithway St., Los Angeles 22, Calif. • ANgelus 2-2151



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1900 EUCLID AVENUE • CLEVELAND 15, OHIO

PURCHASING OCTOBER, 1950

OFFICE EQUIPMENT and SUPPLIES



PURCHASING MAGAZINE — A CONOVER-MAST PUBLICATION

—Modernize—

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Bring your source information up-to-date on new and improved office equipment and supplies by checking the latest trade literature listed on this page. This special office equipment section is in addition to the regular trade literature section on pages 19, 20, 23, and 24!

— When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.—

(*Continued from page 24*)

☐ **65. FLOOR MAINTENANCE**—Booklet tells about the merits of Super-Swiftsheen, a premium floor wax, which reduces re-waxing frequency by from 1/2 to 2/3, making a major saving in labor costs. The Gerson-Stewart Corp., Lisbon Road, Cleveland, O.

☐ **66. THIN PAPERS**—Free test kit shows how good "Sea Foam" is for all thin paper needs. It is available in seven bright routing colors to keep record systems straight. Brownville Paper Co., 28 Bridge St., Brownville, N. Y.

☐ **67. COLORED PENCILS**—The Tryrex Omega colored pencil is triangular in shape, fits the hand and will not roll off your desk. Sample will be sent to you by the Richard Best Pencil Co., Inc., Springfield, N. J.

☐ **68. PRESENTATION BOOKS**—Transparent Plastic Folders, envelopes and factory sheet holders which protect blue prints, drawings, charts, work orders, job tickets, shop orders, lubrication charts, etc., are described in Catalog Digest issued by Joshua Meier Co., Inc., 153 W. 23rd St., New York, N. Y. Your sales and advertising department may be interested in the plastic presentation books.

☐ **69. KEYSORT CARDS**—Broadside describes and illustrates Keysort cards for materials and stores requisitions, purchase and expense vouchers, payroll records, sales orders, shipments, etc. Simplicity of operation and high efficiency feature their use, along with quick processing of daily volume. The McBee Co., 295 Madison Ave., New York, N. Y.

☐ **70. ADDING MACHINES** — Colorful folder tells about and illustrates Burroughs adding machines. These include electrically operated and hand operated machines, covering every figuring need. Burroughs Adding Machine Co., Second Blvd., Detroit, Mich.

☐ **71. COMPTOMETER** — The Floating Touch Electric Comptometer, which makes multiplication and division faster and easier, which supplies easy-to-read answers, and which is readily portable, is subject of four-page brochure. This is Comptometer 3411, and is made in three standard sizes—8, 10 and 12 columns. Felt & Tarrant Mfg. Co., 1735 No. Paulina St., Chicago 22, Ill.

☐ **72. MULTI-COLOR PENCIL** — Booklet shows how the Multikolor pencil—red, black blue and green, speeds up checking of estimates, plans and specifications. Norma Pencil Corp., 137 West 14th St., New York, N. Y.

☐ **73. PROSPECT CONTROL** — Two record systems designed to keep management in close control of sales development are covered in Booklet KD 539. The systems help "develop, direct and concentrate sales effort in order to analyze prospects, cut cost per sale, and increase total sales". Remington Rand, Inc., 315 4th Ave., New York 10, N. Y.

☐ **74. ADDRESSING MACHINES** —Booklet describes and illustrates the many types of addressing machines made by Elliott Addressing Machine Co., 616 St. Clair Ave., E., Cleveland 14, Ohio. Special booklets are available on the Cardvertiser which prints and addresses cards, system for banks and trust companies, system for public utility companies, system for payroll work, system for tax work, addressing and post-card printing machines for REMC organizations, and other booklets.

READER SERVICE

All listings include names and addresses of manufacturers.

However, each one is numbered. If you want to save Multiple-letter writing, just jot down the numbers of the items you want and month of issue, and list them in a letter on your COMPANY letterhead to

Reader Service Dept.
PURCHASING Magazine
205 E. 42nd St.,
New York 17, N. Y.

NOTE: This service also applies to all the new products, equipment and supplies listed on pages 130-176.

Get these 4 Important Benefits



with

NATIONAL RING BOOKS and RING BINDERS

1 LOCK BOOSTER SAFETY

National's perfected Lock Booster Lever opens rings at a touch. Pressed the other way, it locks them, preventing spilled sheets.

2 STEEL-HINGE ENDURANCE

Designed and developed by National — use-tested in thousands of offices — the steel hinges of National Ring Books and Ring Binders are anchored firmly, lastingly *into the leather.* Perfect flexibility and flat opening . . . without danger of cracking.

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Colored and grained to match the cover. Strongly riveted to the mechanism. It protects cover at points of greatest wear.

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Only the best grades of leather or imitation are used by National. The steel mechanism is rigid and sturdy for a life-time of dependable, rugged use.

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. . . now in its second printing by demand . . . contains illustrations and description of National Stock Forms and Housings for every record-keeping use in every kind of business. Get your copy today from your local National Stationer or write direct. $1.00 per copy.

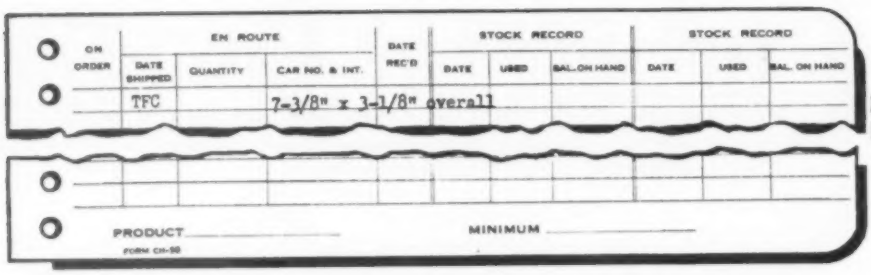


NATIONAL

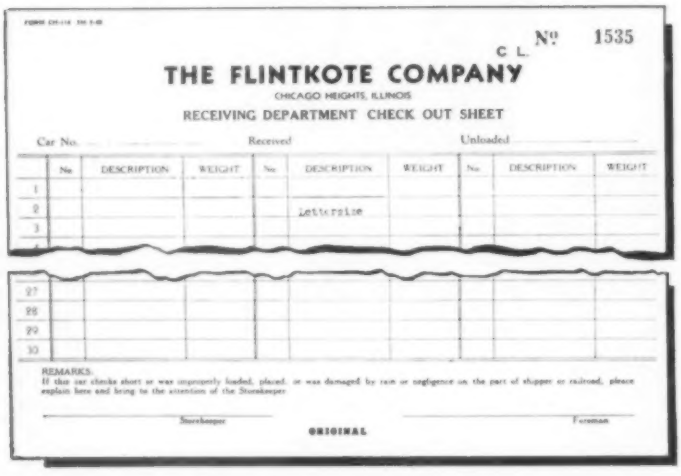
NATIONAL BLANK BOOK COMPANY

NEW YORK CITY HOLYOKE, MASS. BOSTON SAN FRANCISCO CHICAGO

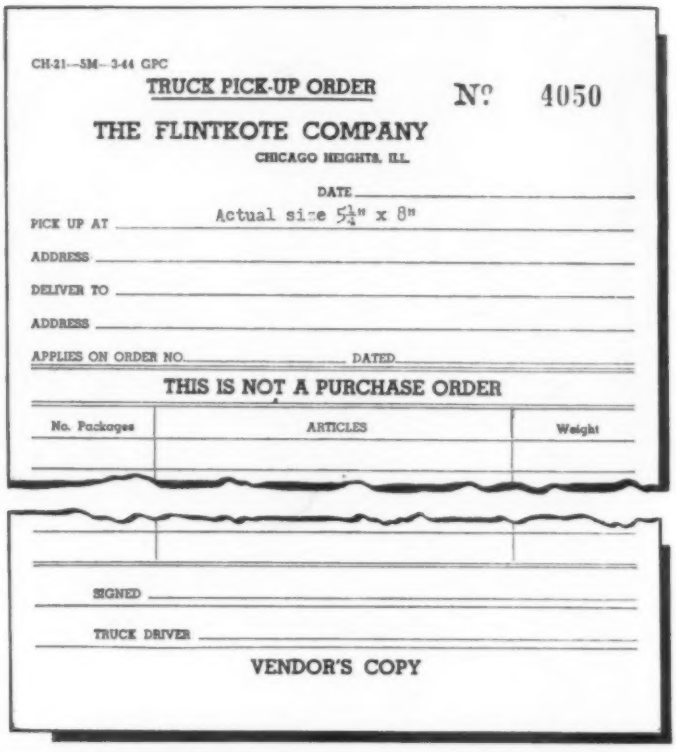
(*Continued from page* 186)



En Route—stock record. It is used to keep check on carload raw material ordered and inventory.

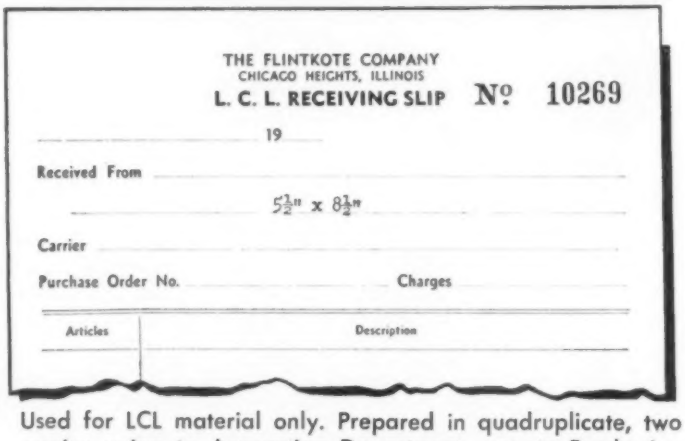


Receiving Department Check Out sheet. Record of carload material received. It is made in duplicate, both copies going to Accounting Department.

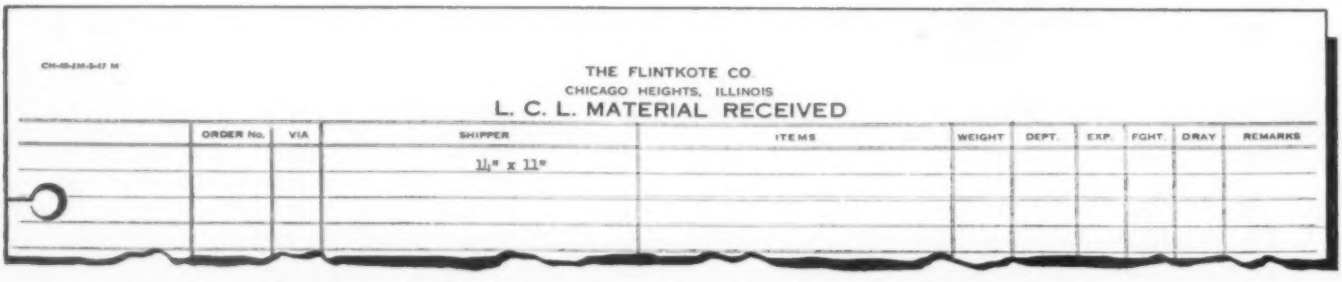




Freight Arrival Notice. This is reverse of Receiving Department Check Out Sheet above.



Used for LCL material only. Prepared in quadruplicate, two copies going to Accounting Department, one to Purchasing Department, and one to Storeroom.

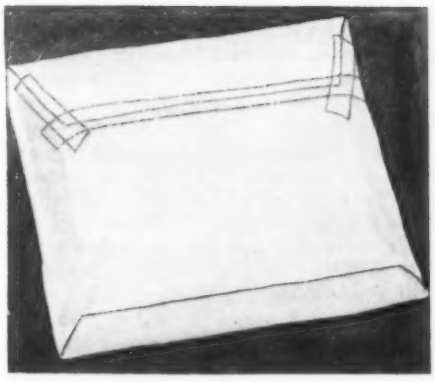


This form. 14" x 11", is filled out by the Receiving Department and then forwarded to the Accounting Department to keep tab on handling charges.

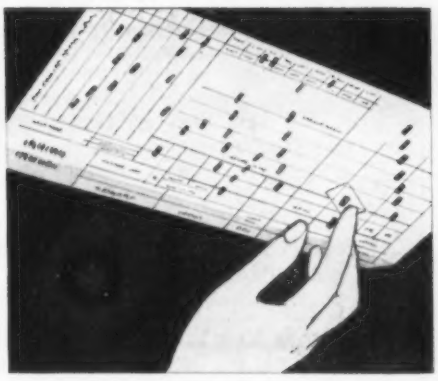


WORKS SLICK AS A WHISTLE!

"SCOTCH" Cellophane Tape saves time on all kinds of office chores



SEALS boxes, packages, bulky envelopes for first-class mailing.



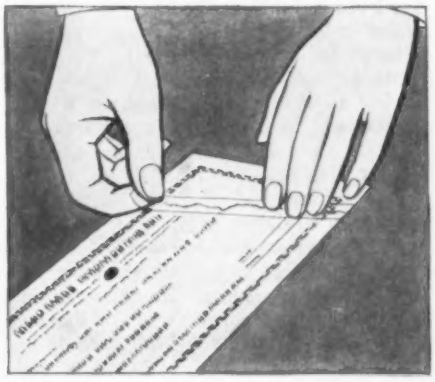
CORRECTS mistakes and revises information on tabulating cards.



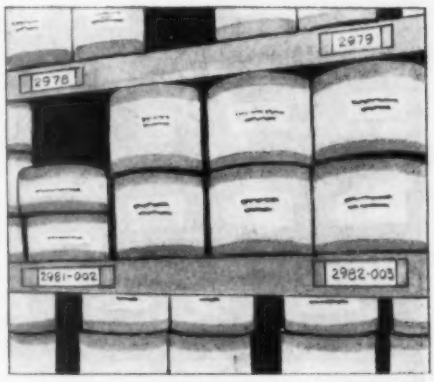
HOLDS swatches, coins, clippings to letters and files.



REINFORCES binders, notebooks, file folders, indexes.



MENDS torn bills, vouchers and currency invisibly.



LABELS supply shelves, rubber stamps, storage boxes.



PUT A NON-TEARING EDGE on maps, charts, blueprints, drawings, photographs with the "SCOTCH" Edger. Applies a tough, wrinkleproof edge of specially made "SCOTCH" Acetate Fibre Tape No. 750. Order from your office supplies dealer.



SEAL 7,000 MAILING PIECES an hour with the "SCOTCH" Automatic Mailing Piece Sealer. Cuts and applies a neat one-inch strip of tape to all kinds of printed matter. Tape seal holds tight and adds to the appearance of the piece.



HELPS YOU zip through scores of chores around the office. Remember, there's more than one brand of cellophane tape—for quality always insist on the "SCOTCH" brand, in the bright plaid container.

Made in U. S. A. by MINNESOTA MINING & MFG. CO., St. Paul 6, Minn.,

also makers of "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-Slip Surfacing, "3M" Abrasives, "3M" Adhesives.

General Export: DUREX ABRASIVES CORP., *New Rochelle, N. Y.* • *In Canada:* CANADIAN DUREX ABRASIVES LTD., *Brantford, Ontario*

The Present with a Colorful Future

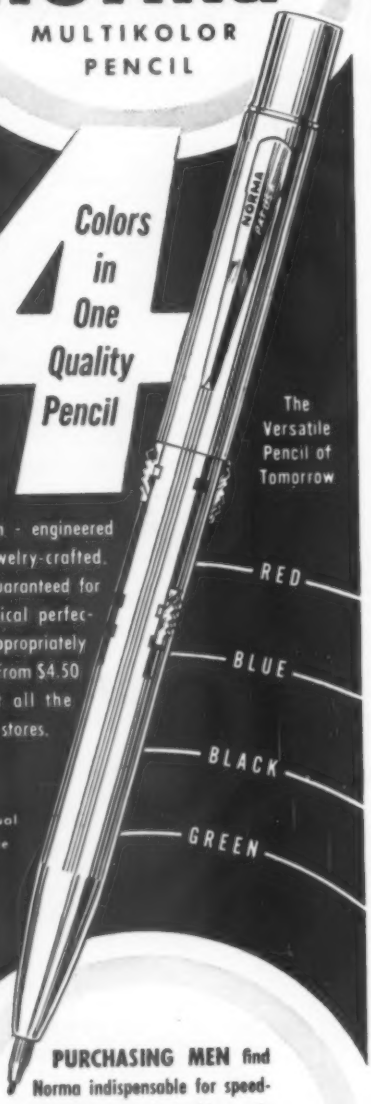
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MULTIKOLOR PENCIL

4 Colors in One Quality Pencil

The Versatile Pencil of Tomorrow

Precision - engineered and jewelry-crafted. Fully guaranteed for mechanical perfection. Appropriately boxed. From $4.50 up—at all the better stores.



PURCHASING MEN find Norma indispensable for speeding the work of checking estimates, plans, specifications . . . Norma makes an excellent gift to build business good will. Write for new booklet showing other uses for 4-color Norma Pencils; no obligation.

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137 West 14th Street, New York 11, N. Y.
Please send me, without charge, your new color booklet showing how Norma Pencils help to speed special daily tasks.
Name.....
Address.....
City.....Zone.....State.....P

CRESCENT INDUSTRIES INTRODUCE "STENO" DICTATING MACHINE

Steno, latest entrant in the electronic dictating field, is a wire recorder being introduced by Crescent Industries, Inc., 4140 W. Belmont Ave., Chicago Ill. With high fidelity and simple push-button operation, Steno's features include a remote station for secretary's use with a built-in intercom for two-way conversations, a removable turntable for use in a transcription pool or for the continuous recording of sales conferences, etc., an automatic back-spacer, and a split-second timer making it possible to locate swiftly and accurately any word in the dictated copy. The complete unit consists of dictating machine, remote station transcriber, and necessary accessories. Crescent Industries has long been associated with the radio components industry.

COLOR TELEVISION PRESENTATION AT NATIONAL BUSINESS SHOW

On October 23, 1950, at Grand Central Palace in New York City, the "Mid-Century Mark of Progress" 1950 National Business Show will present Vericolor, its beauty and its use. This will be the first public demonstration of color television in New York City. Vericolor, the color television system, manufactured for commercial use by Remington Rand, will for the first time be on view to the general public the week of October 23rd. The demonstration will be of about 15 minutes duration, on the hour and half hour, 18 shows daily, or 115 shows during the week, Monday through Friday.

The format of the display will not be the usual cut and dried demonstration. It will be a colorful, dramatic presentation of color television in its industrial uses. The presentation will include—

1. A lively color demonstration which will fade into an effective use of Vericolor in industry. It will clearly show one industrial use to which Vericolor has already been adapted.
2. The National Business Show scene will be depicted. Interesting personalities will be interviewed and friends and guests of the National Business Show will be included in the presentation.
3. Then will follow a demonstration of office equipment and appliances that will include the latest electrical and mechanical devices designed for greater office efficiency.
4. Audience participation will wind up the demonstration. At this feature, observers will be able to view themselves over color television.

The National Business Show will take advantage of floor activities—special things that are happening at that time throughout the Palace. Also, the medical and educational uses to which Vericolor has already been put will be explained by commentators.

This is the first time the general public has been invited to participate in viewing color TV. The demonstration will be transmitted over closed circuits from the floor of the National Business Show at Grand Central Palace. The screens will be so arranged that the viewers may see both the transmission and the picture. Also, viewing screens will be set up in convieniently placed lounges that will enable the entire attendance of the Show to view this presentation.

NEW INTERCOM FEATURES UNIT CONSTRUCTION

Ability to disassemble the new Executone intercommunication Master station, replace the amplifier or selector switches, and then reassemble the entire unit in only six minutes, is helping to save the intercom user considerable time and money when he wants to expand or service his system. This is made possible through the use of "unit construction" in the Master station. No more than six screws need be removed to replace either the amplifier or selector and no soldering of connections is necessary.



A user who chooses to start with a two station system can now expand it economically by simply removing the selector switch and replacing it with a seven or eleven station "Expansion kit". Similarly, a seven connection Master can be expanded to accommodate eleven other stations.

Further information on this new inter com can be had by writing to the manufacturer, Executone, Inc., 415 Lexington Ave., New York 17, N. Y.

DUPLICATOR USES PASTE INK

Duplicator Corp., Yonkers, N. Y., American Division of a British Company, is introducing a British stencil duplicator, which uses a paste-ink somewhat like that used in a printing press. The ink is packaged in a flexible tube which is clipped into the machine and vacuum fed to the dual cylinder printing system. The machine, which is known as the Gestetner, can be used for color printing, and will also reproduce illustrations from stencils prepared photographically.

(*Please turn to page* 192)

Nylon gives TYPING sheer beauty, too!



Your own letters, typed with Underwood Corporation NYLON RIBBONS, give you a clear-cut picture of superior performance

Nylon—the wonder fabric—is being used for so many things that its use by Underwood Corporation for superior typewriter ribbons was inevitable.

Whether you use standard or electric typewriters, you will appreciate the better-looking typing made possible by Underwood Corporation Nylon Ribbons.

Your typists will like them because their finished work is always crisp and neat. Every character is sharp and clear-cut. They produce better originals, and more copies can be made at one time . . . carbon copies are cleaner and sharper, too.

It's more economical to use Underwood Corporation Nylon Ribbons. They last longer . . . because they are strong and free of lint . . . you get better work at lower cost. Another worthwhile advantage is that fewer time-wasting changes are necessary with Underwood Corporation Nylon Ribbons.

And to complement Nylon's characteristics, Underwood has developed a new line of inks in all the necessary colors.

Quick-drying and color-true, these new inks enhance even further the appearance of finished work.

And all this improvement is yours *at a saving!* Because of its strength, wearing quality and flexibility, Nylon is especially suitable for typewriter ribbons. You'll find that an Underwood Corporation Nylon Ribbon helps typists turn out superior work *all* of its long, long service life.

Next time you're buying supplies, don't fail to include Underwood Corporation Nylon Ribbons . . . and add beauty to your typed work.

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Underwood Corporation

One Park Avenue
New York 16, N. Y.
Supply Division
Burlington, N. J.

Want Additional Product Information? See Page 19.



Answers ALL Your Thin Paper NEEDS

SEA FOAM BOND

for MULTIPLE COPIES
FACTORY AND OFFICE FORMS
DIRECT MAIL STUFFERS
SPACE-SAVING RECORDS
AIRMAIL LETTERHEADS

Thin, crisp, Sea Foam Bond can standardize lightweight office and factory forms at sizeable savings in time AND money. As America's favorite thin business paper, it serves all your office and factory paper needs.

Sea Foam's lightness cuts down postage — gives you EXTRA SHEETS per pound. Sea Foam's *thinness* permits many clear carbon copies at one typing. Saves on file space, too. In 7 bright routing colors to keep your record system straight.



Write for
SEA FOAM'S FREE Test Kit

Shows you just how good Sea Foam is for all thin paper needs! Write on your company letterhead.

BROWNVILLE PAPER COMPANY
The Mill of Fine Lightweight Papers
28 Bridge St., Brownville, N. Y.

FIXED BED ALL-PURPOSE MACHINE DESK OFFERED

A new desk, described as a Fixed Bed All-Purpose Machine Desk, has just been added to the line of steel office desks made by Yawman and Erbe Mfg. Co., Rochester 3, New York.

Catalogued as No. 6600-03 FBL, this desk has a top measurement of 60" wide, with the portion to the right of the machine well being 30" deep. The machine well is angled slightly along the front and inside edges to permit positioning the machine to suit the operator's convenience. Front to back depth at this point is 34". Equipped with molded gray linoleum top, brushed chrome corner caps and binding strip and adjustable island base, this new desk becomes a part of the No. 6000 Associate Line. Machine well is linoleum covered and has an insulated hole for electrical wiring. Finish is "Y and E" Neutra-Tone Gray.



The machine well is angled to permit machine positioning

Uses of the machine include both typewriter and accounting machine applications of various sorts. In all instances the machine is available in a convenient location for required use throughout the day. The large flat top to the right of the machine bed permits a multitude of general clerical uses. Right-hand pedestal contains three card or box drawers.

C. H. LAVIS NAMED ROYAL BALTIMORE DISTRICT MANAGER

David B. Starrett, vice president in charge of sales for the Royal Typewriter Company, announces the promotion of C. H. Lavis to the position of Baltimore District Manager.

BUREAU OF BUDGET BULLETIN PRESENTS WORK MEASUREMENT SYSTEM

Techniques of developing and installing a system of work measurement adaptable to a variety of operations are described in a 44-page booklet, *A Work Measurement System: Development and Use (A Case Study)*, issued by the Bureau of the Budget, Washington, D. C.

Published for the use of Federal agencies as a guide in the improvement of measures of work performance, the booklet is also being made available to private business firms and the general public.



File Clerk Janie no longer misreads blurry, blunt-pencil writing. The office boy isn't constantly running to the sharpener, either ... Mongol Pencils are *guaranteed* not to break in normal use. Mongol erasers are of exceptional quality, too! Sound good? Ask your Stationer for pamphlet 'How to Relate Pencils to Results'—*free*.

EBERHARD FABER
since 1849

Exclusive Redifixt *Features*
W-2
1950 TAX FORMS
IN STOCK AT LOWEST PRICES
Federal • State • Social Security
N. Y. FORM 105
for
TABULATOR-N.C.R.-ADDRESSOGRAPH

NEW
STANDARD
Redifixt BUSINESS FORMS
CONTINUOUS SINGLES
INVOICES—CHECKS
BILLS OF LADING

NO QUANTITIES TOO SMALL
FAST DELIVERIES
PRODUCED ON
POST WAR ROTARY PRESSES

CONSOLIDATED BUSINESS SYSTEMS, INC.
30 VESEY ST., N.Y. 7, N.Y., DEPT. 006

The study is based on the experience of one large Federal agency, the Office of the Adjutant General, in the development and use of work measurement, but is supplemented by information derived from the experience of other Federal agencies and private business firms. It is intended for administrators and supervisors as weil as management specialists.

The booklet describes a measurement system peculiarly suited to administrative and service-type work in both Government and business. This system provides a basis for measuring activities which have generally been considered unmeasurable by traditional methods because the operations performed are much less routine than those normally found in manufacturing or more repetitive types of office work.

One of a series of management bulletins prepared by the Bureau of the Budget, the study discusses types of work measurement, approaches to the development of an appropriate system, selection of work and time units, establishment of work standards, reports and analyses, and uses of work-measurement data in programming, budgeting and day-to-day management.

The booklet may be obtained for 30 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

'PHONE INDEX ATTACHED TO TELEPHONE



Telephone index known as the Dextra Snapon 'phone index, is being distributed by Pacific Distributors, Portland, Oregon. The index has coated index cover with steel backing and frame, and by means of snapon fastening is readily attached to any conventional desk or table model square back telephone.

SUFFOLKS' GUIDE TO THE MAILS

Suffolk Publications, Greenlawn, N. Y., recently released the Domestic Edition of "Suffolk's Guide to the Mails" (includes first class foreign air and ship postage rates), which is characterized as a guide to postal shortcuts and money saving hints. The Guide clarifies postal rules and regulations, and contains more than 100 specific tips to save money and time. The price of this 90-page book is $2.00.

(*Please turn to page* 194)



"Yes sir, that's my brand!"

"Reckon you know about the high quality of any product with the Webster brand.

"Webster means duplicating supplies that last longer—so cost less.

"And the Webster brand stands for a mighty proud outfit, too. It's a spur that keeps us Webster hands working continually to make even better products.

"For 61 years folks everywhere have been hankering for our merchandise from coast to coast.

"So the next time you need duplicating supplies of dependable quality, order Webster's.

"See your nearest dealer or write F. S. Webster, 7 Amherst Street, Cambridge, Massachusetts."

F. S. WEBSTER COMPANY

Webster's warehouses in key cities from coast to coast:
New York, Philadelphia, Pittsburgh, Detroit
Chicago, San Francisco, Cambridge

Here are some thoroughbreds in the Webster corral





1. WEBSTER'S Silk Star Typewriter Ribbons . . . made from finest silk, remarkably strong and durable. Carefully inked to produce exceptionally clear-cut impressions.

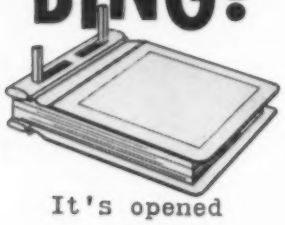
2. WEBSTER'S Micrometric Carbon Paper . . . with its exclusive numbered edge eliminates retyping for spacing errors. Gives clear, sharp impressions even after *continuous hard usage.*

3. WEBSTER'S MultiKopy Pencil Carbon . . . *gives at least 100 impressions* from a single sheet.

B&P's BING! SPEED BINDERS

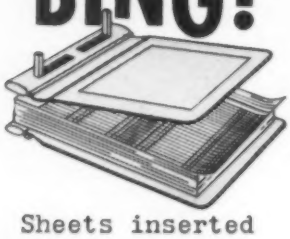
HIDDEN WORKING ASSET

BING!



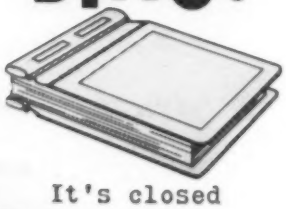
It's opened

BING!



Sheets inserted

BING!



It's closed



No Excuse for Loose Sheets. Match the time-saving, work-saving speed of Standard Boorum & Pease BING Speed Binders against any you have ever used. Save space, too, because there are no protruding posts. Light weight but durable -- 6 stock sizes, bound in green canvas or black fabrihide, with or without stainless steel rims. Ask your stationer to demonstrate all their advantages.

Standard B&P Boorum & Pease product

FOR EVERY RECORD • A WAY TO KEEP IT

BROOKLYN 1, N. Y.

UNDERWOOD INTRODUCES NEW PORTABLE TYPEWRITER

New portable typewriter called the Finger-Flite Champion, which has office size typewriter keyboard, and large number of new features, was recently introduced by the Underwood Corporation, One Park Ave., New York, N. Y. The



Spacings between keys are the same as on regular office machine

new machine, with its case, weighs a fraction more than 16 pounds. Statement is made that it operates with all the smoothness and stability of the conventional office machine. It incorporates a new design feature which reduces creeping. The machine is finished in non-glare gray with gray keytops, and maroon cylinder knobs and space bar.

PENCIL BARREL HOLDS 36" OF MEMO PAPER

Pencil being introduced by A. H. Walter, Inc., 30 Church St., New York, called "Mem-O-Riter," and which is of the propel-repel type, contains 36" of memo paper concealed in its barrel. A flick of the cap releases the paper through a slot to the desired length. Barrel may be used to hold a roll of 36 postage stamps in place of the memo paper.

NEW CATALOG ON KARDEX VISIBLE RECORD CONTROL

Anyone interested in the efficient maintenance of business records and effective administrative control over all phases of business management can secure many helpful suggestions from the new 80 page catalog "Kardex Visible Record Control" just published by the Management Controls Division of Remington Rand Inc.

Completely revised from cover to cover, and brought up to date on the basis of a recent development in the important field of records administration, this booklet is a comprehensive presentation on all phases of the Kardex Visible Control principle.

It describes the various combinations of record forms which may be incorporated in Kardex "pockets" and the infinite variety of colored signal control methods which may be used on the visible margin of the records. New computing charts which eliminate drudgery from the calculation of percentages of quota for sales control records and action

requirements for inventory control are pictured and described.

Five types of Visible Cabinets are illustrated, including the sensational new mechanized unit, Robot-Kardex, with complete specifications on all sizes available. Safe-Kardex Insulated Equipment for protecting vital records from fire is also described, as well as the complete line of Kardex portable units for visual sales and summary records.

Copies of this catalog may be obtained by writing to the Management Controls Division, Remington Rand Inc., 315 Fourth Avenue, New York 10, New York. It is identified as KD 462.

NEW BOOKLET DESCRIBES REPRODUCTION METHODS

A new, 16-page booklet, "Modern Drawing and Document Reproduction," describes photographic materials and methods for improving legibility of reproduced engineering drawings and business documents.

Published by the Eastman Kodak Company, the booklet provides information on reproduction of tracings, blueprints, and opaque drawings on paper, film, and cloth. Specialized recommendations describe suggested procedure for restoring old drawings and eliminating hand tracing.

Additional information is provided on reproducing business forms correspondence, and card records. Microfile equipment is briefly described, together with projection materials for making prints from microfilm negatives and for making change-of-scale copies.

The booklet is obtainable without charge from the Industrial Photographic Division, Eastman Kodak Company, Rochester 4, New York.

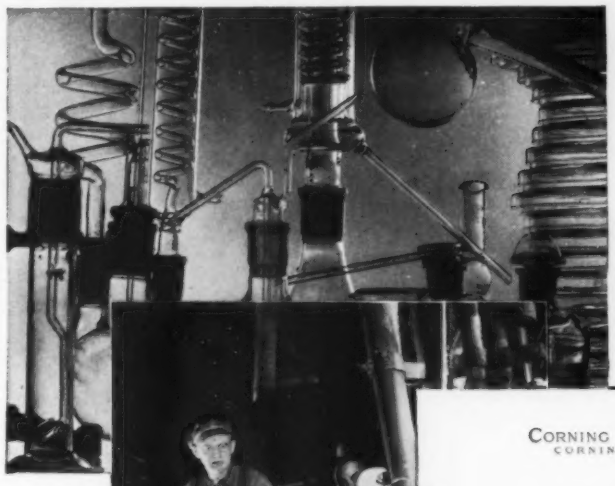
SELF-COMPENSATING POWER CONTROL UNIT FOR TALK-A-PHONE



Designed to overcome high noise levels and solve unusual intercommunication problems, the Redi-Power self-compensating power control unit is announced by Talk-A-Phone Company, Chicago. It will be available as optional equipment in the company's Chief line. Redi-Power provides power to reply from considerable distances from the unit, thus overcoming the problem of being unable to reply to paging. It is especially effective where there is a high noise level, or where remote installations complicate intercommunication. Whether one, two, ten or twenty stations are called, each receives its predetermined volume to the full ten watts of each Redi-Power unit. Push-button control makes operation instantaneous, convenient and fool-proof.

(*Please turn to page* 196)

Prominent Users of Strathmore Letterhead Papers: No. 90 of a Series



Glass, one of the most unusual and versatile of basic materials, though over 5000 years old, still has potential uses that are virtually unlimited. Corning, with a policy of continuous research, has become one of America's foremost manufacturers of glass for science, industry and the home.



CORNING GLASS WORKS
CORNING NEW YORK

Strathmore helps Corning sell 37,000 products

Whether your company manufactures one item, or 37,000 like Corning Glass Works, every letter it sends out merchandises your firm and its products. For a letterhead gives the recipient a corporate picture ...in its quality, in its character, in the very feel of the paper.

An organization like Corning, with its forward-minded thinking and planning, is aware of the strategic importance of using stationery that makes an immediate impression of soundness and fine reputation. Naturally Corning selected a Strathmore expressive letterhead paper to do the job for them.

Do some personal research on your own company letterhead: Has it the look and feel of efficiency and of quality? Does its design interpret the mood of your company today? If your analysis shows that your letterhead is not giving the best possible performance, then contact your supplier; have him submit up-to-date designs on Strathmore papers. You'll find that these will be pictures of your company that characterize an alert, progressive firm.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond. Envelopes to match converted by the Old Colony Envelope Company, Westfield, Mass.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

REDUCE ADDRESSING COSTS!



DUPLISTICKERS speed-up addressing, reduce costs, increase efficiency. Typists address 4 or more copies in one operation on letter-size sheets of 33 gummed, perforated labels. Paper is specially made for maximum number of clear copies. Ideal for mimeo and ditto duplicating. Clean, quick-part perforations, uniform stick-fast gumming. Completely trouble-free in every respect. Absolutely foolproof.



Speed-Up *Your* Addressing with Eureka *DUPLISTICKERS*

Use "Duplistickers" for addressing all duplicate mailings, direct mail advertising, bulky envelopes, samples, premiums, etc. Postage indicia can be printed on labels for bulk mailings. "Duplistickers" serve dual purpose as address and seal on self-mailers and may be used on return cards. Package of 25 sheets (825 labels) 50¢ at leading stationery stores. White, blue, pink, green, canary, goldenrod, for color-coding.

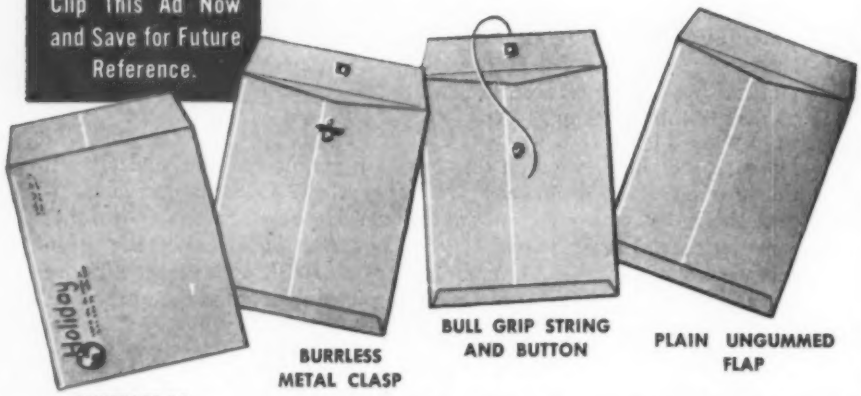
Write for FREE Sample Package

Eureka Specialty Printing Co.
552 Electric Street
Scranton 9, Pa.

®
DUPLISTICKERS are made only by EUREKA

SAVE!
BUY DIRECT FROM MANUFACTURER
Clip This Ad Now and Save for Future Reference.

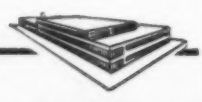
CATALOG ENVELOPES AND MAGAZINE MAILERS



SAFETY-EDGE MAGAZINE MAILER
BURRLESS METAL CLASP
BULL GRIP STRING AND BUTTON
PLAIN UNGUMMED FLAP

Shown are four styles in envelopes and "mailers" designed for improved and lowered handling costs. Equitable makes catalog envelopes to your specifications. Attach ad to one of your present envelopes and tell us your requirements: plain or printed, open end, metal clasp or string and button — we'll submit direct-from-our-own-mill quotations by return mail.

Equitable
PAPER BAG COMPANY
Mills at Orange, Tex.
45-50 VAN DAM STREET
LONG ISLAND CITY 1, N. Y.



RECORDS MANAGEMENT AND OFFICE ADMINISTRATION INSTITUTE

Lloyd H. Angstadt had been named director of the Institute of Records Administration and Management Controls to be opened this fall by Remington Rand, Inc., 315 Fourth Avenue, New York, N. Y. Scheduled to open its first customer seminar within a few weeks, the newly formed Institute will have a broad over-all approach to the subject of records management and office administration, following through with specific problem solutions.

DO-ALL-IN-ONE CABINET ANNOUNCED BY ART STEEL SALES

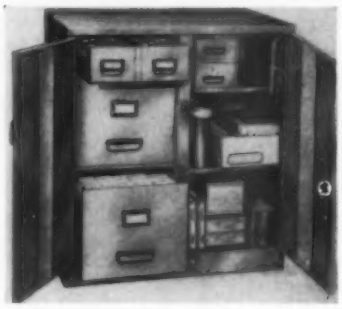


Illustration shows the Do-All-In-One cabinet recently announced by the Art Steel Sales Corporation, 170 West 233rd St., New York 6, N. Y. The new cabinet is a heavy duty, heavy-weight unit, 34" high x 30" wide and 16" deep. It contains space for cards, letter files, safety deposit, secret vault, supply storage space and two outside doors which lock on a central locking system. Fourway key protection is afforded to valuables and office records. The cabinet comes in two sizes—AA-1 letter size, and AA-2, legal size, in green or grey finish.

ADJUSTABLE KEY DIP ELIMINATES ELECTRIC TYPEWRITER EXERCISES

Following development of a new adjustable Key Dip for their company's Electri-conomy typewriter Remington Rand typewriter utilization specialists announce the elimination of practice exercises often previously required for transition from manual to electric typewriters.

Coupled with Electri-conomy's standard keyboard slope, an electric typewriter feature pioneered on this machine, the Adjustable Key Dip makes possible "touch-tuning" to the preference of the individual operator before delivery and prevents errors resulting from too sensitive key action and misfirming. Typist transition time is cut from days or weeks to minutes because the operator no longer has to adjust her key pressure to conform to the typewriter.

Kolor-Keyboard, an additional mid-year improvement on the Electri-conomy, is now a feature of all 1950 Remington machines. Permanent, injection molded symbols on finger-fitted keys are colored to complement the gray machine color

and harmonize with modern office decor. Functionally, the Kolor-Keyboard is scientifically designed to accentuate the visible, working parts of the typewriter which is an aid to efficient typewriter utilization.

INTERCOMMUNICATION SYSTEM FOR SIX OR 12-STATION UNITS

System of intercommunication that permits six-station or twelve-station master units and remote stations to be intermixed on the same circuit, is announced by Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City, N. Y. In this system known as the Con-Fer-Phone, master stations can call each other at will and carry on several two-way conversations or private conferences with as many masters as desired. Each master can call any one or all of the remote stations. There are two types of remote stations: One type can receive a call from any master but cannot originate a call to the master. The other type can both receive and originate. Both types of remotes can be wired for privacy. Masters are six-station and 12-station.

INDIVIDUAL ROOM CONDITIONERS FOR CENTRAL SYSTEM

Two new one-room air conditioners to be attached to a central system, have been announced by Worthington Pump & Machinery Corp., Harrison, N. J. The new units, known as the RVY Series, are being manufactured at the Holyoke works of the corporation. They are characterized as being ideal for buildings in which each room must be individually controlled by the occupant. The units are made in two sizes, and each unit contains one small 60 cycle, single phase motor which will operate on 115 volts.



These flexible conditioners may be furnished for direct expansion where there are only a few units, or for chilled water for large installations. The chilled water cooling coils may be converted by a single switch to become heating coils. Direct outside air may be taken through a filter or high pressure fresh air may be supplied. The units may be fully automatic controlled with a thermostat or manually controlled. They are equipped with quiet operating, double width, slow speed oversized fans. For clean coils and minimum maintenance, 100% of the air is cleaned by these conditioners.

(*Please turn to page* 199)



first from

UARCO!

Multi-Linkt

BUSINESS FORMS

first to combine—

the *Speed* of continuous typing...



- **Forms feed themselves—typist only types.**
- **No realigning, no fussing with carbons.**
- **Sets linked in packs of 500 or more.**
- **Consecutive numbering assures control.**

the *Convenience* of E-Z-Out sets



- **Form units detach into E-Z-Out sets.**
- **Carbons are in place for later entries if needed.**
- **One quick motion separates carbons and forms.**
- **Copies for all—color-controlled.**
- **All styles, standardized and custom.**

Low in Cost! You can now buy Multi-Linkt *continuous* forms for only pennies more than you pay for unit sets. Call your Uarco Representative for a free demonstration—send coupon for free samples.

UARCO
Business Forms
INCORPORATED

Factories: Deep River, Connecticut; Chicago, Illinois; Cleveland, Ohio; Oakland, California. *Sales Representatives in all principal cities.*

UARCO Incorporated
141 West Jackson Boulevard
Chicago 4, Illinois

Please send me samples of Multi-Linkt business forms.

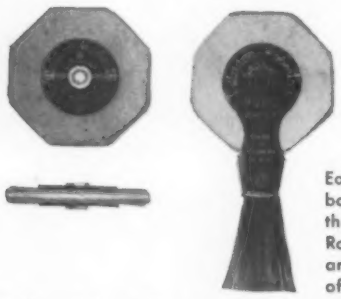
Name.....

Address.....

City.....*State*.....

Typists' "STEADY"





Weldon Roberts Erasers please the most workers, do the cleanest erasing in the least time. Your dealer has Weldon Roberts Erasers in the styles best suited to your requirements.

Easier to work with than many bosses — consistently more reliable than many boy friends. Weldon Roberts Erasers TRI-PLY and SUEDE are dependable, quality "steadies" of countless typists.

Both numbers octagonal-shaped. In brush-top styles, too, for giving eraser crumbs a quick, clean brush-off. No. 3900 TRI-PLY WHISK — No. 9000 SUEDE WHISK, both with durable plastic holders, pebble grained to prevent finger slipping.

WELDON ROBERTS RUBBER CO. Newark 7, N. J.

Weldon Roberts Erasers
Correct Mistakes in Any Language

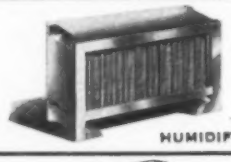
National Cedar-King

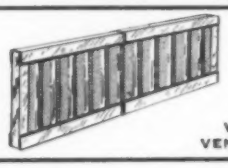


THREE SAFEGUARDS to *Protect* your Health *and* Wealth


MODEL "H" CHECK WRITER

A


B HUMIDIFIER


C WINDOW VENTILATORS

A. Safeguard Instant Checkwriters with Security Lock prevent unauthorized use and afford you complete bank account protection.

B. Room Humidifier automatically maintains proper degree of humidity, cuts down absenteeism due to colds — reduces fuel bills. Designed for home, office or factory.

C. Air In Window Ventilator permits a continuous change of air in Winter or Summer. Rain and snow cannot blow or splash through ventilator. Designed for home, office or factory.

WRITE FOR ADDITIONAL INFORMATION

Safeguard Corp. LANSDALE, PA.
Safeguard International—3312 Lancaster Ave., Phila. 4

Are Your Catalog and Information Files Up-to-Date?

Here's a way to add the latest data on new developments to your catalog and information files with a minimum of effort.

The Reader Service Department of Purchasing Magazine will obtain for you any of the new trade literature listed on pages 19, 20, 23, 24 and 180 or additional facts on any of the products mentioned in the "New Products and Ideas" section, pages 130-176.

Simply write on your company letterhead, indicating the numbers of the items on which you want literature or further information.

Check these pages now, mentioning month of issue, and send your request to:

Reader Service Department
PURCHASING MAGAZINE
205 E. 42nd St., New York 17, N. Y.

NEW COTTON-FIBRE ENVELOPE BOND PAPER

Announcement of a 100% new-cotton-fibre bond paper with exceptionally fast and permanent sealing advantages, is made by the Gilbert Paper Co., Menasha, Wis. Known as Lancaster envelope bond, this instant-sealing sheet is said to overcome the difficulty of securing a quick-safe seal with envelopes in the 100% new-cotton-fibre (or rag) class. Special formulation prevents the envelope and flap from warping and curling. The envelopes stack and feed absolutely flat, according to the Gilbert Paper Company, who also announce that free samples of the new envelopes may be had for testing.

UNDERWOOD ANNOUNCES SMALL LEADER ADDING MACHINE



A new Leader Adding machine has been introduced by Underwood Corporation, One Park Avenue, New York 16, N. Y., which features the natural sequence ten key keyboard and is especially designed for small business use. The Leader is sturdily constructed and portable. It will list up to 9,999.99 and total to 99,999.99. Features for operating convenience include automatic sub-total, multiply repeat key, correction keys and paper release lever. It contains an adjustable paper roll holder for narrow and wide rolls.

NEW COMPTOMETER ADDING—CALCULATOR ANNOUNCED

An entirely new Electric "Floating Touch" Comptometer adding-calculating machine is announced by Felt & Tarrant Mfg. Co., Chicago.

The machine features a key stroke so smooth, cushioned, and quick acting that the term "Floating Touch" is used to describe it.

The operator is fully protected against imperfect key strokes by an entirely new mechanism. The instant a key is fumbled, every key is locked except the one not fully depressed, and this one remains down, easily visible to the operator, who simply completes the key stroke, touches the release button and continues adding.

The new Electric Comptometer has a quiet running motor of the latest "start and stop" variety, developing terrific torque for fast operation. It runs only when the keys are depressed.

(*Please turn to page* 200)



What's New In A Filing Cabinet? . .

If you look far enough you can probably find one with hot and cold running water, but if you are only interested in a matched line of cabinets that will efficiently file all your office papers, then CRESTLINE is your perfect answer. Solid lifetime steel construction, noise-free smooth operation and a complete range of drawer sizes that will protectively store for ready reference everything from a 3 x 5 card to a map of Texas . . . these are yours in CRESTLINE Files by Security.



9401 CRESTLINE Letter File

Crest LINE

SECURITY STEEL EQUIPMENT CORP., AVENEL, N. J.

A LINE TO BUILD ON Security STEEL

(*Continued from page* 199)

The new Comptometer has a newly designed case, finished in a soft blue-green. Key tops, in colors to harmonize with the case, are made of two-shot plastic. Other features include larger,



more legible answer numerals; elimination of ciphers to left of answer; larger answer apertures, counterboard to reduce shadows; and the use of strong yet light metals to reduce over-all weight.

BOOKLET DESCRIBES ECONOMY FILES

Remington Rand's new line of low-priced "Revere" file cabinets is described at length in an introductory booklet just issued by that company. The new files, according to the brochure, contain many of the same advantages of durability and fine craftsmanship found in the premium-grade "Aristocrat" cabinets, yet are designed especially for those filing operations in which economy is a major factor.

Available in three-, four-, or five-drawer cabinets, and with either letter or legal sized drawers, the files are extremely flexible in that substitute drawers may be employed to accommodate variously sized cards, documents or miscellaneous material in box drawers. The files can also be readily equipped with special devices such as Flexi-File, a unique system of linen "hammocks" which prevent filed papers from slumping.

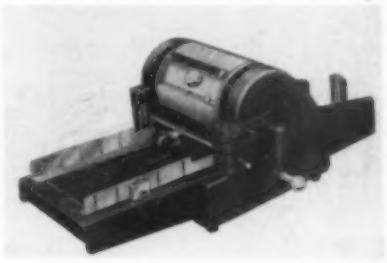
The booklet, identified as LBV 538, may be obtained from any Remington Rand Branch Office, or by writing to 315 Fourth Avenue, New York 10, N. Y.

GUIDE TO INTERIOR DESIGN FOR THE OFFICE

Non-technical booklet on interior design for the office, ante rooms, conference rooms, etc., featured by illustrations and floor plans and color chart, is available from the Royal Metal Manufacturing Co., 175 N. Michigan Ave., Chicago 1, Ill. With the accent on metal furniture and how it can be used most effectively, the booklet of 24 pages gives information on How to Select Colors, Clor-Atmosphere Association, Relation of Color and Material, and hints on space and arrangement and dimensions. The color guide matches upholstery fabric colors with wall, floor and ceiling treatments.

HAND OPERATED STENCIL DUPLICATOR FOR AVERAGE SMALL BUSINESS

A new hand operated stencil duplicator, the Niagara 110, was recently introduced by the Niagara Duplicator Co., 725 Second St., San Francisco, Calif. It was especially designed for the average small business and as a "utility duplicator" for large firms. It has a printing range up to 90 copies per minute. Among the features are accurate registration con-



New Niagara hand operated duplicator

trol, improved front pull feed, 9" printing range adjuster, half ream feed, closed drum, adjustable receiving tray, and the automatic roller release. Speed and simplicity of preparation, fast-smooth operation, handling a wide variety of grades and weights of paper, with no attachments to take off or put on, are factors that contribute to the low-cost operation and efficiency.

Holder of Records
—for time to come
RISING IS RIGHT



Years of handling and constant usage —Rising No. 1 Index takes them in stride . . . without splitting or dog-earing. Easy to handle, taking an excellent impression, and your printer's first choice for records—

Rising No. 1 Index

- White and four colors
- 100% rag
- 2 sizes
- 5 weights

WHEN YOU WANT TO KNOW . . . GO TO AN EXPERT!

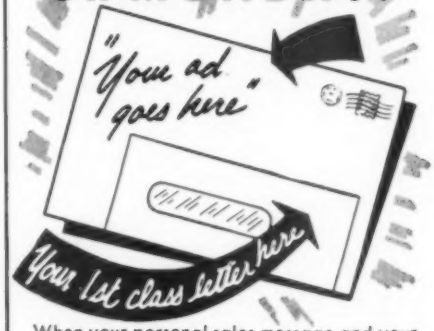
Rising Papers

Rising Papers

ASK YOUR PRINTER . . . HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.

SUNDAY PUNCH . . . on MONDAY!



When your personal sales message and your catalog* go in a Sheppard Simultainer—that ingenious combination envelope for 1st and 3d mailing:

CHEAPER—Pay 1st class postage on letter and 3d class on catalog.*

SIMULTANEOUS ARRIVAL—Catalog* and letter arrive together—are seen together.

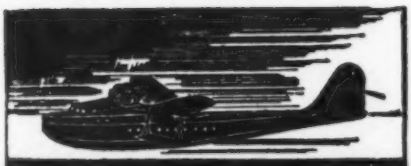
ONE ADDRESSING—1st class enclosure window envelope needs only letter address.

GREATER ATTENTION—Letter and catalog* together get 1st class care. Write today for free sample.

*Also excellent for photos, blueprints, specifications and all third class material.

Sheppard with-the flavor seal flap ENVELOPES

1 ENVELOPE TERRACE, WORCESTER 4, MASS.



THIN PAPERS

Reduce

TYPING, MAILING and FILING COSTS

Use

ESLEECK

THIN PAPERS

Fidelity Onion Skin

Clearcopy Onion Skin

Superior Manifold

Esleeck Manufacturing Co.

Turners Falls, Mass.

"How did your file clerk find the papers so quickly?"



The answer is obvious—her files are equipped with Oxford Pendaflex hanging folders. This new style folder saves so much time that filing costs are cut as much as 20%. Install them in your present cabinets: you'll see immediate results.



Send for catalog today.

OXFORD FILING SUPPLY CO., INC.
Garden City
N. Y.

Don't file it — HANG IT!

Oxford

PENDAFLEX®

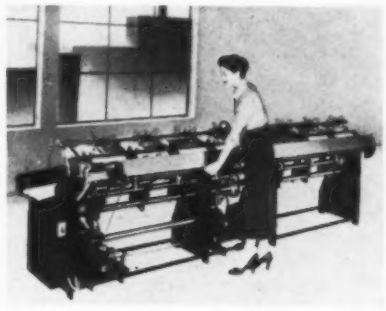
HANGING FOLDERS

COLLATOR GATHERS 25,000 SHEETS PER HOUR IN SETS OF EIGHT

A new machine capable of gathering more than 25,000 sheets of paper into sets of eight in an hour's time is being manufactured for, and distributed by, the Harris-Seybold Company, Cleveland 5, Ohio.

Known as the Macey Collator, the mechanical gatherer is said to assemble sheets in sequence five to eight times as fast as a skilled gathering specialist, and can be operated by a single semi-skilled employee.

Emphasis has been placed on extreme simplicity in the Macey Collator's construction. However, its speed and accuracy are said to make it a real production machine, able to handle an impressive volume of work in offices or printing departments.



The Macey Collator

To avoid gathering "doubles"—a bugaboo of the usual friction-feeding mechanisms—the Macey Collator uses suction to pick up each sheet, simultaneously separating it from others in the pile with a blast of compressed air. As an additional precaution, an automatic detector checks each completed set, stopping the machine if there is an extra sheet or if one is missing.

Built on the conveyor principle, the Macey Collator consists primarily of eight hoppers or stations facing a slanted stainless steel tray. Each station will accommodate a stack of paper 11-½ inches high, about 3,000 sheets of 20-pound stock.

Although the machine will collate up to eight sheets per set, individual stations can be turned off, and any number of sheets from two to eight can be gathered. One plant is now using the Macey Collator to rush assembly of ten thousand 250-page loose-leaf notebooks, eight pages at a time.

Maximum sheet size for the new collator is 9-½" x 12", with a minimum of 5" x 8-½". The machine has successfully handled stock ranging from 9-pound to ⅛" cardboard, both plain and punched. The stations are individually self-leveling, keeping the top sheet at proper height for separating and feeding regardless of weight of stock.

Macey Collators have been installed at Harris-Seybold's offices in New York, Cleveland, Chicago and Atlanta. Harris-Seybold will arrange to make demonstrations upon the actual work of concerns interested in mechanizing their collating operations.

Why **OMEGA**

COLOR PENCILS DO A BETTER JOB



1 — strong, thin lead holds needlepoint

2 — light pressure makes clean, sharp figures

3 — 24 brilliant, waterproof colors — will not smear

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Plus **FAMOUS TRYREX**

the shape that fits your hand — prevents rolling

OMEGA COLORED PENCILS

It will cost you nothing

to prove these points at your own desk. This coupon clipped to your business letterhead will bring you a free sample.

Richard Best Pencil Company, Inc.
Springfield
New Jersey

Please send free sample of the Omega Colored Pencil, to my attention:

Name_____



The show goes home on the dotted line

Televising a show takes talent, technical genius and paper forms—*plenty* of them.

Programs, for example, are arranged and talent screened with paper forms. Salaries are paid, advertisers billed and checks, invoices, statements typed on paper. Forms even buy factory parts, check inventory, see a set assembled, then deliver it.

Moore's DOTTED LINE helps keep all these operations grooved and swift-moving. It's the perforation on forms made by Moore—and an *idea*, a time-saving, cost-cutting system that puts snap into the work of a single employee or a company.

Here—in Moore's DOTTED LINE—you have an invisible force that runs through an organization saving profit *where profit is often lost*. Forms may vary from a simple stock Order Pad to a 14-part continuous Order-Invoice giving many departments full instructions from one quick writing.

Let a Moore representative show you how (1) system is improved and (2) cost controlled in businesses *like* yours. Or write any factory: Niagara Falls and Elmira, N. Y.; St. Paul, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif.; Salem, Ore.

1 Sales Books for Every Business Operation
2 Continuous Interleaved Typewriter Forms
3 Continuous Register Forms and Registers
4 Fanfold Billing Machine Forms
5 Speedisets for Fast Carbon Extraction
6 Marginal Punched Business Machine Forms

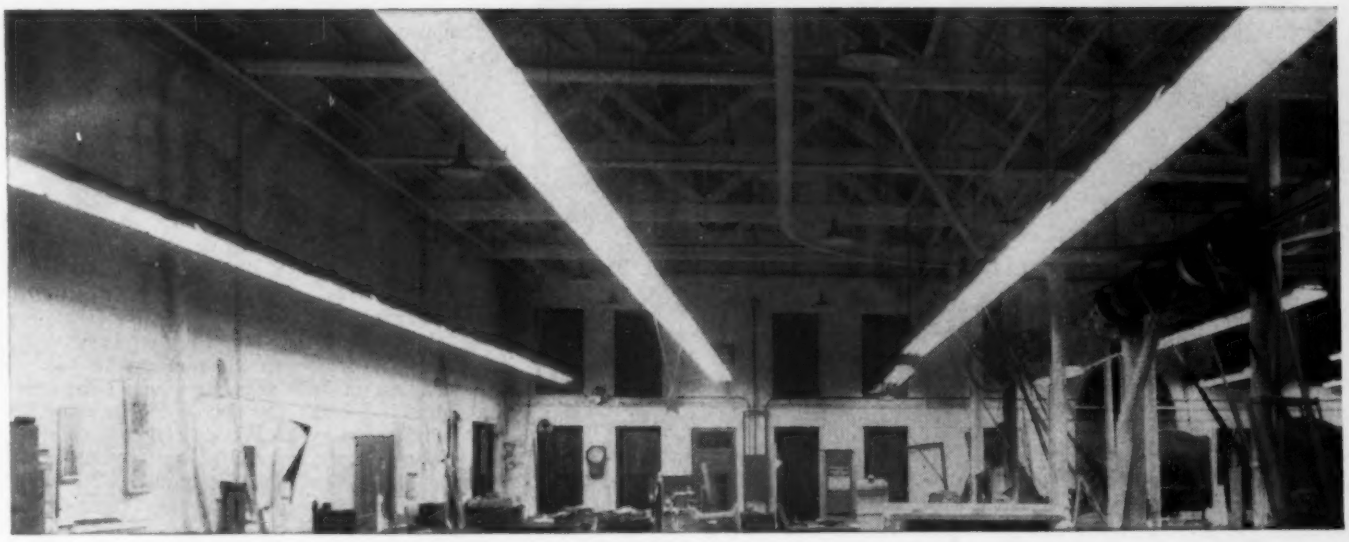
MOORE

BUSINESS FORMS, INC.

Offices in over 200 cities. Regional factories and distribution points in Canada also * * * THE RIGHT BUSINESS FORM FOR EVERY FORM OF BUSINESS!

Fewer fluorescent lighting maintenance headaches!
Lower maintenance costs! More light for your money!..with

General Electric Simplified Lamp Replacement Plan!



Free, informative literature now available from General Electric

NOW! Fluorescent lighting maintenance can be easier, more effective and more economical in factories and large office areas with General Electric's new Simplified Lamp Replacement Plan.

Simplified Lamp Replacement—replacing fluorescent lamps in groups instead of singly—reduces the high cost of replacing every individual tube as it burns out. All the fluorescent lamps in a section or department are replaced near the end of their life, just before the great majority are about to burn out. The results: fewer interruptions of office or factory work; fewer man-hours spent in replacing lamps; a cleaner, brighter lighting system; fewer starter and ballast breakdowns; more light for the money. Already in use by many leading companies, Simplified Lamp Replacement is *proved* to be practical.

Simplified Lamp Replacement is especially economical today because of the increased life and low cost of G-E fluorescent lamps. General Electric lamp prices are now so low that the cost of changing a single lamp is often greater than the cost of the lamp itself.

LEARN ALL ABOUT IT! General Electric has literature available on Simplified Lamp Replacement. It's yours for the asking. In addition, General Electric offers the service of its lamp engineers to help you tailor a lamp replacement plan to fit your individual needs. Write the Lamp Department, Div. 166-P10, General Electric Company, Nela Park, Cleveland 12, Ohio.

LAMPS

You can put your confidence in—

GENERAL ELECTRIC

Among the ASSOCIATIONS

New Officers of Milwaukee Association



Shown above are the new officers and directors of the Milwaukee Association of Purchasing Agents, elected at the June meeting of the group. Seated left to right are: K. E. Groth, Stolper Steel Products Corp., secretary; E. H. Jones, E. R. Wagner Mfg. Company, director; N. A Schowalter, West Bend Aluminum Company, president; C. W. Failmezger, Socony-Vacuum Oil Co., Inc., treasurer. Standing, left to right, are: W. H. Pritchard, Kearney & Trecker Corporation, national director; F S. Perkins, Globe Steel Tubes Company, vice-president; C. B. Johnson, Chain Belt Company, director. Two other directors, W. F. Brossmann, T. L. Smith Company, and C. E. Krause, The Massey-Harris Company, were not present at the time the picture was taken.

The opening meeting of the new season was held on September 12 at the Milwaukee Elks Club. The principal speaker was Nathaniel Leverone, chairman of the board of the Automatic Canteen Company of America. His subject was "Freedom and Understanding". The program committee this year is under the direction of Emil Jones, a past district vice-president.

NEW YORK ASSOCIATION NAMES COMMITTEE CHAIRMEN

The following committee chairmen for 1950-1951 have been announced by the Purchasing Agents Association of New York:

Stuart T. Edgerton, United States Rubber Company, advisory; Lewis A. Norris, New York Stock Exchange, attendance; Ephraim F. Duskis, A. S. Beck Shoe Corporation, auditing; Elsie B. Gruber, Bigelow-Sanford Carpet Company, Inc., dinner; Philip M. Lederberg, Lentheric, Inc., educational; Claire W. Goodman, Union Carbide & Carbon Corporation, eligibility; William H. Old, American Brake Shoe Company, forum; E. W. Beck, Socony-Vacuum Oil Co., Inc., membership; Benedict Van Voorhis, E. I. du Pont de Nemours & Company, nominating; Wyckoff L. Garrison, Ingersoll-Rand Company, outside activities; E. A. Bantel, National Bureau of Casualty Underwriters, program; Charles N. Feldmann, Kennecott Copper Corporation, reception.

"SOCIAL RESPONSIBILITIES IN BUSINESS" TWIN CITY TOPIC

The Twin City Association of Purchasing Agents held its first meeting of the new season on September 20, in the auditorium of the Farmers' Union Grain Terminal Building. Member Al Boesel invited the group to tour the office building prior to the meeting.

Guest speaker following dinner was M. W. Thatcher, general manager of the Farmer's Union Grain Terminal Association. His talk was on "Social Responsibilities in Business".

HAWK NAMED EDUCATIONAL CHAIRMAN FOR DISTRICT TWO

F. Gayle Hawk, regional manager of Shell Oil Company, Houston, has been appointed educational chairman for District Two of N.A.P.A., Sam H. Harper, district vice president, has announced

Mr. Hawk, who will supervise and direct the educational program throughout the district, has served in many important committee assignments in the Houston Association. He has had considerable experience in material control and materials management, and has made a number of talks on these subjects before purchasing classes at the University of Houston, as well as before various professional and oil industry groups.

With Shell Oil Company for the past 21 years, he began his career with the company in 1929 as a clerk in Chicago. In 1934 he was transferred to the company's refinery at Wood River, Ill., as assistant storekeeper. He later served at the Norco, La., and the Houston refineries as storekeeper, and then returned to Wood River as storekeeper for the entire plant.

Mr. Hawk was transferred to Houston in August, 1947, as assistant regional purchasing-stores manager. He held this post until June of this year when he assumed the duties of manager of the department.

BENJAMIN F. FAIRLESS SPEAKS AT PHILADELPHIA MEETING

Benjamin F. Fairless, president of the United States Steel Corporation, was the guest speaker at the September 14 meeting of the Purchasing Agents Association of Philadelphia, held in the Bellevue-Stratford Hotel. Mr. Fairless was presented by Robert W. Wolcott, chairman of the board of the Lukens Steel Company, and a close personal friend.

The afternoon forum meeting featured an informal discussion on written purchasing policies. The panel leading the discussion was composed of William R. Murray, general purchasing agent of Bigelow-Sanford Carpet Company, Thompsonville, Conn.; Frank C. Dengler, purchasing agent of International Resistance Company of Philadelphia; and David B. Lansdale, chairman of the forum committee of the Philadelphia As-

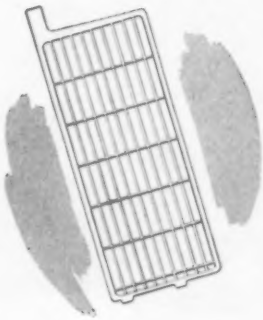
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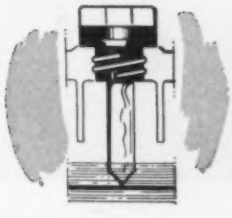
GOULD-POWERED TRUCKS!

Keep Production Rolling!

Here's why. Battery trucks are always ready to work . . . position loads faster . . . cut accidents . . . are quiet and odorless . . . are safe with foods and inflammables . . . hug the floor on turns and high lifts . . . reduce operator fatigue.



Gould's "Z" Grid is completely solid all the way through. Porosity reduced 85%! 66% more resistant.



Gould batteries with Televel Vents save time and trouble— show electrolyte level without removal of Vent Caps.



Regenerative active material that renews itself continuously is held in place to do useful work by exclusive glass tape insulation.

Power your trucks with

GOULD "THIRTY" BATTERIES

America's Finest Industrial Truck Batteries

GOULD

STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, INC.*

TRENTON 7, NEW JERSEY

Always Use Gould-National Automobile and Truck Batteries

*Formerly Gould Storage Battery Corporation

NEW Aircomatic® Process jumps Welding Speeds to NEW HIGHS



Aircomatic is a new metal arc welding process that permits high-speed welding of aluminum, of aluminum bronze and of stainless steel — *in all positions*..

The process uses a bare wire electrode in coil form, continuously fed to the work within an inert gas shield. High current densities are used providing excellent penetration and high deposition rates, *permitting welding at speeds greater than ever before possible.*

Aircomatic welding has proved most economical . . . for its high deposition rate, in addition to permitting high travel speed, also makes possible fewer passes on heavy material, and faster, heavier deposits for overlay or build-up work. This means more weld per unit of arc time, whatever the job. Further, since the wire is bare and continuously fed through a shield of inert gas, electrode changes and slag removal interruptions are eliminated, thus permitting almost 100% arc time in using the high operating speeds.

SAVES 16 MAN-HOURS WELDING TIME . . . Dempster Brothers, Incorporated of Knoxville, Tenn., makers of the nationally-known "Dempster-Dumpster" found Aircomatic welding cut their aluminum container manufacturing costs.

The other method was slow — cumbersome, and ran the cost exceedingly high. With Aircomatic the same container was produced — at a welding cost reduction of approximately 16 man-hours.

Another important feature of Aircomatic welding is its minimization of distortion. This is due to its high speed operation (heat can be concentrated and moved rapidly along the work), plus the fact that a small amount of weld metal is all that's required in most joints.

The case studies on the opposite page show how this dramatic new welding process is helping others. While the facts and figures are startling, they could very easily be applied in your own shop . . . but find out for sure. Write . . . or phone your nearby Airco office. Ask for a copy of ADR 66: "Aircomatic Welding Process".



SAVES 4½ HOURS... Martin-Quaid Co., of Philadelphia, Pa., used the New Aircomatic Process to reduce the time and cost of welding huge stainless steel cylinders used in the manufacture of carpets. They found this revolutionary process cut materials cost 25% . . . and saved 4½ hours working time over the old method — and, at the same time, greatly increased the quality of the finished product.



REDUCES TIME 4/5's... Consolidated Welding and Engineering Company, of Chicago, Ill., adopted the new Aircomatic process for welding aluminum separators. Immediately, major production and cost problems were solved: To weld one complete separator assembly took only 90 man hours — about 1/5 the time of other methods.

Further, Aircomatic's high current density and the attendant high welding speed confined the heating effects to the narrow weld-zone . . . completely eliminating distortion.



ELIMINATES LEAKS... Griffin & Company, of Louisville, Ky., found Aircomatic's high speed and the ability to make welds without interruption ideally suited to the fabrication of tanks for all-aluminum evaporative coolers. Production time and cost was cut to the minimum, and warpage and distortion were completely eliminated. Thus far, the company has made hundreds of these tanks without a single leak.



BOOSTS PRODUCTION 71% . . . The Stewart-Warner Corporation, South Wind Division, Indianapolis, Ind., join the upper and lower halves of its "Safe-Air Gas Home Heater" with the completely new, high-speed Aircomatic Process. This time-saving, cost-cutting process skyrocketed production 71% . . . and cut manufacturing costs in proportion.

AIRCO **AIR REDUCTION**

Offices in Principal Cities

HEADQUARTERS FOR OXYGEN, ACETYLENE AND OTHER GASES . . . CALCIUM CARBIDE . . . GAS CUTTING MACHINES . . . GAS WELDING AND CUTTING APPARATUS, AND SUPPLIES . . . ARC WELDERS, ELECTRODES AND ACCESSORIES



Get { 30% MORE ENDURANCE
28% MORE STRAIGHT CUTS
5% MORE SPEED
WITH TODAY'S
MILFORD
ALL-HARD
REZISTOR
HACK SAW BLADES



Recognized for years as top performers, MILFORD All-Hard REZISTORS are even better today! Severe break-down tests, conducted under identical cutting conditions, show today's All-Hard REZISTORS have 30% more endurance, deliver 28% more straight cuts, and are 5% faster than previous REZISTORS. M-2 high speed steel, a new development in metallurgy, enables REZISTORS to withstand friction of high speed cutting — adds hours to the blade's life. Specify these longer-lived time-saving, money-saving MILFORD blades. Select Industrial Distributors can serve you from stock.

This booklet tells you more. Get your copy, and literature on the complete line, from your MILFORD Distributor today. Or, write direct to the factory.



THE HENRY G. THOMPSON & SON CO.
Saw Specialists Exclusively For Over 70 Years
NEW HAVEN 5, CONNECTICUT, U.S.A.

Profile and Band Saw Blades — MILFORD — Rezistor & Duplex Hack Saw Blades

SOLD THROUGH SELECT INDUSTRIAL DISTRIBUTORS

(*Continued from page* 204)

sociation, Scott Paper Company, Chester, Pa.

The Banking, Insurance and General Office Buyers Group also met in the afternoon, and discussed "Disposal of Used Office Equipment". Walter J. Langendorfer was meeting chairman.

HEINRITZ GUEST SPEAKER AT M.P.A.C. MEETING

The Metropolitan Purchasers Assistants Club held its first fall meeting on Tuesday, September 12, at the Midston House, New York, N. Y. Guest speaker was Stuart F. Heinritz, Editor of Purchasing. Mr. Heinritz's subject was "This Business of Buying".

A film entitled "Arizona Sun" was presented through the courtesy of American Airlines, Inc. It features a description of the flight of a plane from its starting point to its destination in Arizona.

W. B. WIGHT GUEST SPEAKER AT BALTIMORE ASSN. MEETING

The first meeting of the new business year of the Purchasing Agents Association of Baltimore, Inc., was held at the Lord Baltimore Hotel on Wednesday, September 20. Guest speaker was Wilson B. Wight, a member of the Rochester Association and a prominent figure in the educational activities of the National Association of Purchasing Agents. Mr. Wight's subject was "Education in Purchasing". Mr. Wight also led a brief discussion on "Government Contracts".

The Baltimore Association has been devoting increasing attention to the subject of education in purchasing, and at one time purchased sufficient copies of Stuart F. Heinritz' "Purchasing" to present one to each member of the association.

Officers of the association are: Frank W. Pettit, Western Maryland Railway Co., president; William N. Francis, Carey Machinery & Supply Co., vice-president; William Franz, The J. S. Young Co., treasurer; Raymond A. Cadarette, Minerec Corporation, secretary; William J. Young, The Baugh Chemical Co., national director; Anthony J. Peroutka, Federal Reserve Bank, alternate national director. J. H. Gaston, City of Baltimore, vice-president for District Eight, is a member of the association.

HOUSTON ASSOCIATION HONORS ITS NON-RESIDENT MEMBERS

Non-resident members of the Purchasing Agents Association of Houston were honored at the fall Non-Resident Members Night meeting of the association, held on September 26. A cocktail party and fellowship hour for members and guests was held before the dinner meeting.

CENTRAL MICHIGAN ASSN. HOLDS PRESIDENTS' NIGHT

The September 19 meeting of the Purchasing Agents Association of Central Michigan, held at Septer's Dining Room, Lansing, Mich., was "Presidents and Bosses Night". Top executives of member companies were invited to the affair.

Guest speakers included Harold Jones, new president of the National Association of Purchasing Agents and Chet Ogden, N.A.P.A. vice-president for District Four. Among the guests were Bob Matley, a former district vice president, and currently education chairman for District Four, and officers of the following associations: Detroit, Saginaw Valley, Grand Rapids, Western Michigan, and Kalamazoo.

The following schedule of meetings and chairmen for the balance of the business year has been set up: October, at Jackson, Andy Black; November, at Lansing, Floyd Weeks, on the state purchasing system; December, at Lansing, Carl Pfeiffer—Christmas Party and Ladies Night; January, at Lansing, Guy Hill; February, at Lansing, Boyd Rainey; March, at Lansing, Lyman Schafer; April, at Albion, C. W. Burns; May, at Lansing, B. A. Diebert; June, at Owosso, Elmer Bisard—installation of officers.

NAME DAYTON ASSOCIATION COMMITTEE CHAIRMEN

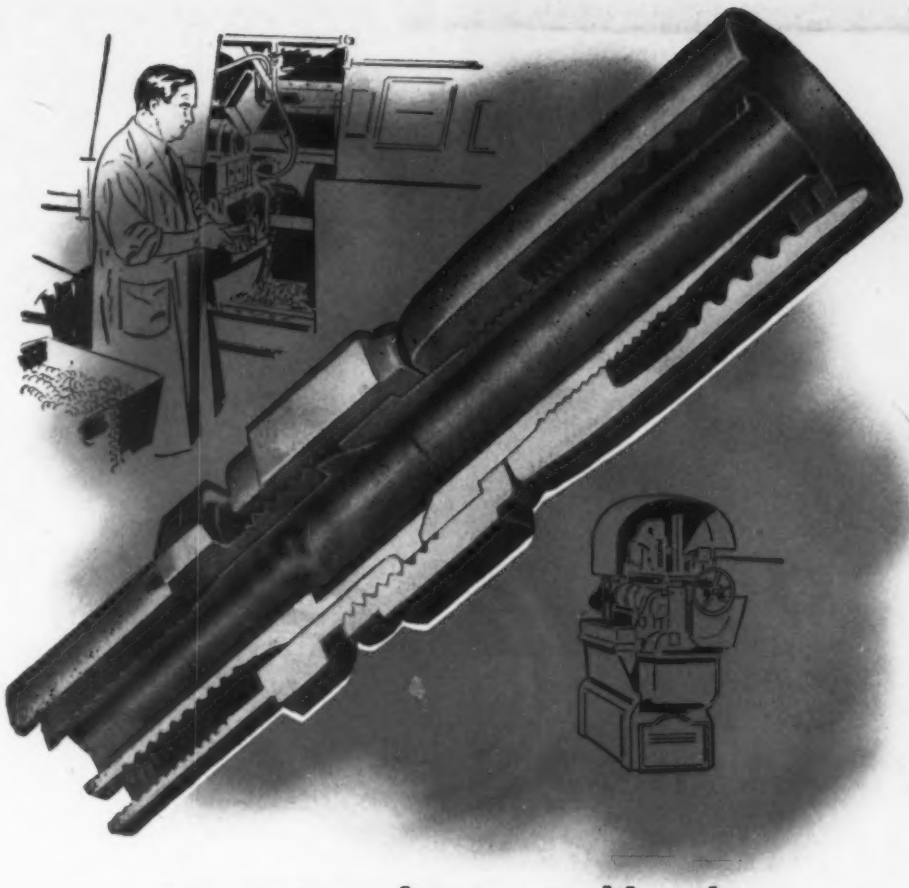
Robert O. Long, Standard Register Company, president of the Purchasing Agents Association of Dayton, has announced the following committee chairmen for the new business year:

H. L. Williams, Monsanto Chemical Company, program; George Young, C. H. Gosiger Machinery Company, ladies party; Don Delscamp, Delscamp Paint & Glass Company, picnic and golf; James Murray, Univis Lens Company, public relations; Ed Thum, Specialty Paper Company, membership; John Kauffman, Egry Register Company, badges; E. K. Griest, Buckeye Iron & Brass Works, publicity; C. R. Kelly, Monarch Marking System Company, convention; Ed Sander, Monsanto Chemical Company, Cincinnati Purchasor advertising; Ted Thompson, Sinclair College, education.

THOMAS D. JOLLY TO SPEAK AT ROCHESTER ASSN. MEETING

The Executives Night meeting of the Purchasing Agents Association of Rochester has been scheduled for Wednesday evening, October 25, at the Rochester Club. The guest speaker will be Thomas D. Jolly, vice-president in charge of engineering and purchasing, Aluminum Company of America; president of the National Standards Association, and past president of the National Association of Purchasing Agents. Joseph L. Ernst is chairman of the program committee.

(*Please turn to page* 210)



You get quality parts like these from men and machines

SPECIALIZING IN LIGHT METALS

Your screw machine products supplier is, basically, men and machines. In Alcoa's plant, both are *specialists in aluminum and magnesium.*

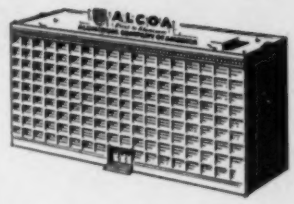
Alcoa operators are Alcoa-trained through extensive apprentice courses—first in screw machine work, next in screw machine work on light metals.

The machines they operate have been selected to do just one job—machine aluminum and magnesium precisely and economically.

That's why Alcoa, pioneer in aluminum for automatic screw machine work, is best qualified to give you quality screw machine parts. At prices no greater than you pay for run-of-the-mill parts.

For a prompt quotation on your job, phone your nearby Alcoa sales office. ALUMINUM COMPANY OF AMERICA, 2130K Gulf Building, Pittsburgh 19, Pennsylvania.

ONLY ALCOA OFFERS YOU ALL THESE UNDER ONE ROOF—



MEN trained specifically in machining aluminum and magnesium alloys.

MACHINES handling all types of rod, bar and tubing up to 3½" O.D.—from hand machines to multiple spindle automatics.

SECONDARY OPERATIONS—Burring, drilling, tapping, milling, slotting, centerless grinding, press forming, stamping, marking, thread rolling, others.

FINISHING—Tumbling, burnishing, chemical dip, buffing, plain or colored Alumilite* finishing.

FINISH QUALITY CONTROL—Laboratory check of Alumilite finishes; regular production checking, final visual inspection.

CONTINUOUS INSPECTION by operators as well as inspectors. Begins with first piece inspection, is continued by operator equipped with all necessary gages; includes process and final inspection employing statistical methods.

LARGE STOCK INVENTORY, adequate to initiate most jobs without waiting for mill shipment of stock.

DESIGN AID that can give you a better product or lower costs, or both. New orders are analyzed by Alcoa engineers for improvements or cost reduction.

ASSEMBLY AND PACKAGING—Alcoa is set up to turn out parts; finish and assemble them, package and ship completed products (not necessarily all-aluminum) ready for immediate resale.

MACHINED FORGINGS, CASTINGS, IMPACT EXTRUSIONS—Gives you the advantages of one source for parts and secondary operations.

LOW COST, FAST DELIVERY—Alcoa offers you all these at competitive prices and dependable delivery schedules.

*Patented Process

ALCOA ALUMINUM SCREW MACHINE PRODUCTS

ALCOA A C ALUMINUM O A ®

Want Additional Product Information? See Page 19.



THERE'S MORE TO A SHACKLE THAN *SIZE* AND *TYPE*

• When a man on a job connects up a shackle he hasn't time to think about how good it is. *"It's the right size and type. Hook it up and let's go!"*

• But when you buy shackles—that's different. You have to remember that there's more to a shackle than size and type. That's where the name Acco is important.

• Acco shackles are forged from fine grain steel which can be depended upon for uniform tensile strength. They're forged in solid dies—most sizes forged already bent. Every one is rigidly inspected under lights which disclose even the smallest defect. (It is almost impossible for a faulty shackle to get by Acco inspectors.)



ACCO SHACKLES *are made in both chain and anchor type—of material from ¼ inch to 2 inches—with round pin or screw pin—finished self-colored, blacked or galvanized—shipped in kegs or barrels, depending on quantity.*

THE HIGH QUALITY that results from this extreme care in manufacture is characteristic of all Acco chain products—welded and weldless chain, all types of fittings and attachments, assemblies, repair links, cotter pins. For a complete line of high quality chain and chain products, look to American —*"The Nation's Chainmaker."*

ACCO

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Brideport, Conn.

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

NEW ORLEANS ASSOCIATION HEARS P.O.E. COMMANDER

A regular monthly dinner meeting of the Purchasing Agents Association of New Orleans was held on Monday, September 11 at the Jung Hotel. Speaker of the evening was Colonel W. W. Moore, Commanding Officer, New Orleans Port of Embarkation. Robert Elsasser, association economist, gave a short talk on general business conditions and predictions for the future.

EASTERN NEW YORK ASSN. HOLDS ANNUAL CLAMBAKE

The annual clambake of the Purchasing Agents Association of Eastern New York was held on Thursday, September 14 at Picard's Grove, New Salem, N. Y. A program of sports was held during the afternoon, including golf at Schuyler Meadows.

DIRECTORY OF U. S. IMPORTERS

A new and authoritative "Directory of U. S. Importers" is being compiled for publication this fall, it has been announced by The N. Y. Journal of Commerce. The first all-inclusive guidebook devoted solely to the listing of importers, it will contain the names and addresses of over 10,000 importers or their agents who have actually done importing during the past three years. Material has been drawn directly from ship manifests published weekly in the Import Bulletin.

Advance orders for the directory, which will include thousands of names of bona-fide importers not now available through other sources, are being accepted by The Journal of Commerce, 63 Park Row, New York 15, N. Y. The price is $5.00 per copy.

RIGID PLASTIC PIPE FOR AIR LINES, SEWAGE, ETC.

Carlon "L" rigid plastic pipe recommended for use in air lines in industrial plants and mines as well as for the transmission of liquids, vapors and gases under moderately high pressure, is announced by Carter Products Corp., 10333 Meech Ave., Cleveland 5, Ohio. It is featured by high tensile strength of 5100 psi, and a flexural strength of approximately 9600 psi. Burst pressures range with pipe diameter—a 2½" diameter section has a burst pressure of approximately 900 psi. It is extremely light in weight and easily handled. Molded standard pipe fittings of plastic are available, and sleeve type connectors can be used for straight piping requirements. The pipe is guaranteed against rot, rust and corrosion. It is completely unaffected by corrosive waters and soils, and is resistant to most acids and alkalis. Carlon "L" is furnished in standard pipe sizes in random 20-ft. length. Threaded adapters are available.

(Please turn to page 212)

ACCURACY

not for its own sake but because it

Reduces your Piping Costs

Exceptional dimensional accuracy and uniformity of Midwest Welding Fittings speeds piping work and reduces cost. All pipe can be cut in advance according to drawings, with assurance of accurate fit. Welders do not have to spend costly time struggling to line up fittings and pipe. Welding proceeds rapidly, economically with no time-wasting compensation for inaccuracies.

All critical dimensions of Midwest Fittings are accurate and uniform. For example, Midwest Welding Elbows are first made slightly oversize. They are then reheated to forging temperature and brought to final size in compression dies. In addition to relieving stresses from forming and welding, this assures true circular cross-section, controlled wall thickness and accurate radius, included arc and tangents. Midwest Elbows and Tees have accurate welding bevels, included angles, etc., because all ends are machined simultaneously in special machines.

There is a Midwest Distributor near you. Get in touch with him for your fitting needs. Also ask for Catalog 48.

4098

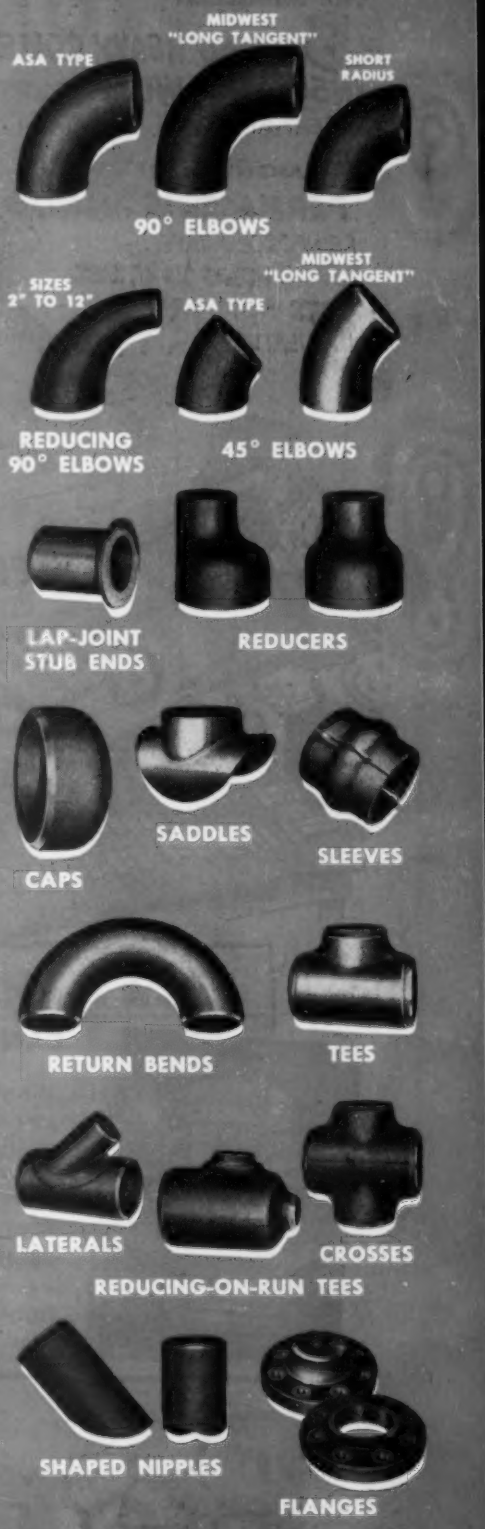
MIDWEST

PIPING & SUPPLY COMPANY, Inc.

MAIN OFFICES: 1450 SO. SECOND STREET, ST. LOUIS 4, MO.

Sales Offices: New York 7—30 Church St. • Chicago 3—79 W. Monroe St.
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MIDWEST WELDING FITTINGS Improve Piping Designs and Reduce Costs



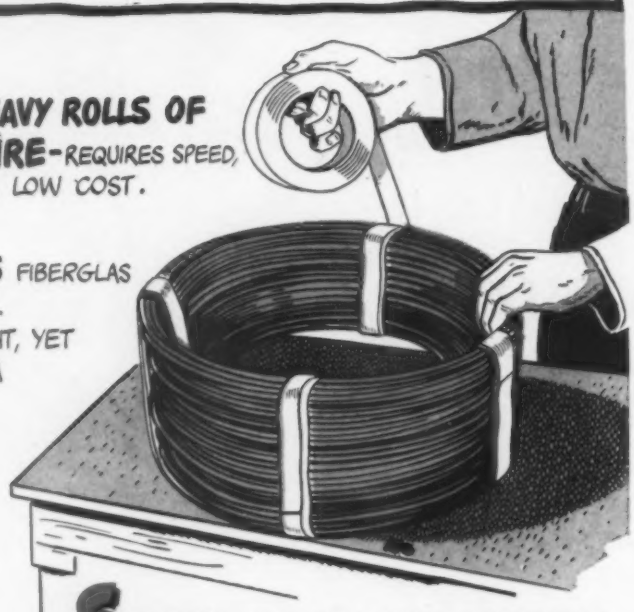
HOW TAPE HELPS INDUSTRY SAVE TIME, CUT COSTS...

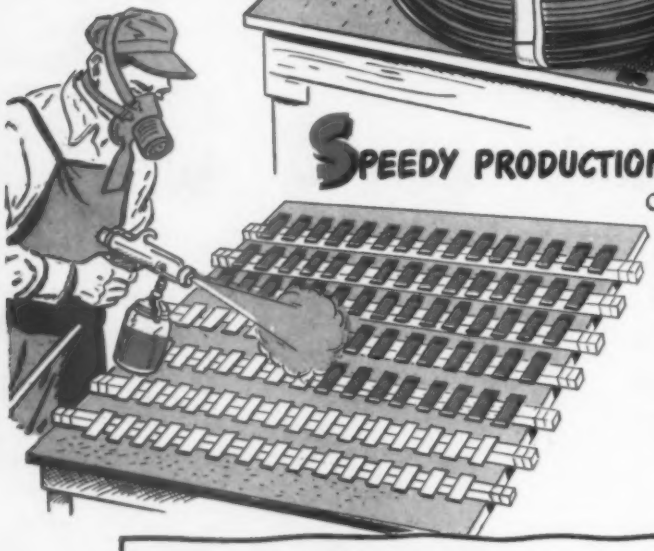
THE PROBLEM:

BINDING HEAVY ROLLS OF INSULATED WIRE—REQUIRES SPEED, GREAT STRENGTH, LOW COST.

THE ANSWER:

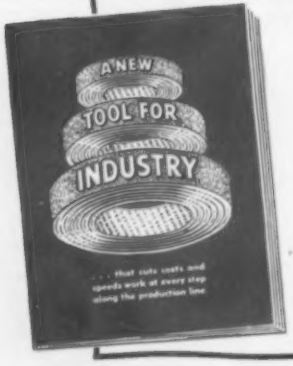
PERMACEL 15 FIBERGLAS REINFORCED TAPE. TOUGH, HOLDS TIGHT, YET DOES NOT HARM INSULATION!





SPEEDY PRODUCTION SPRAYING OF SMALL PARTS MADE SIMPLE AND EFFICIENT. PARTS ARE HELD IN PLACE BY STRIPS OF **PERMACEL** LAID ADHESIVE SIDE UP.

FREE BOOKLET SHOWS HOW TAPE CAN HELP IN YOUR BUSINESS



Whatever your business, chances are you'll find the facts, figures, and pictures in this 12-page booklet will help you cut costs! Just drop a note—on your business letterhead, please—to Dept. 4B, at the address below for your copy.

PERMACEL offers a complete line of tapes—each one *laboratory-developed*, carefully tested under toughest conditions for tensile strength, adhesion, stretch.

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INDUSTRIAL TAPES

INDUSTRIAL TAPE CORPORATION • NEW BRUNSWICK, N. J.

NEW VALUES OF ELECTRICAL AND PHOTOMETRIC UNITS ESTABLISHED BY LAW

By an act approved July 21, 1950 (Public Law 617), the 81st Congress has given formal statutory sanction to a revision of the practical system of electrical units. In large part, the values adopted for these units resulted from research by the National Bureau of Standards, and the present legislation was proposed by the Bureau. The changes in magnitude of the units are small, in no case larger than 1/20 of one percent, but the new law puts the values on a clear and unambiguous basis which assures the closest practicable agreement between electrical and mechanical units.

The new Act is similar to the old law in defining the fundamental practical units as multiples of the units of the centimeter-gram-second electromagnetic system. In fact, however, they are also component parts of the meter-kilogram-second system which is being widely accepted in textbooks and in engineering practice. Two sections of the Act define the basic photometric units, the candle and the lumen, which were not previously defined by law.

The provisions of the law are as follows:

That from and after the date this Act is approved, the legal units of electrical and photometric measurement in the United States of America shall be those defined and established as provided in the following sections.

SEC. 2. The unit of electrical resistance shall be the ohm, which is equal to one thousand million units of resistance of the centimeter-gram-second system of electromagnetic units.

SEC. 3. The unit of electric current shall be the ampere, which is one-tenth of the unit of current of the centimeter-gram-second system of electromagnetic units.

SEC. 4. The unit of electromotive force and of electric potential shall be the volt, which is the electromotive force that, steadily applied to a conductor whose resistance is one ohm, will produce a current of one ampere.

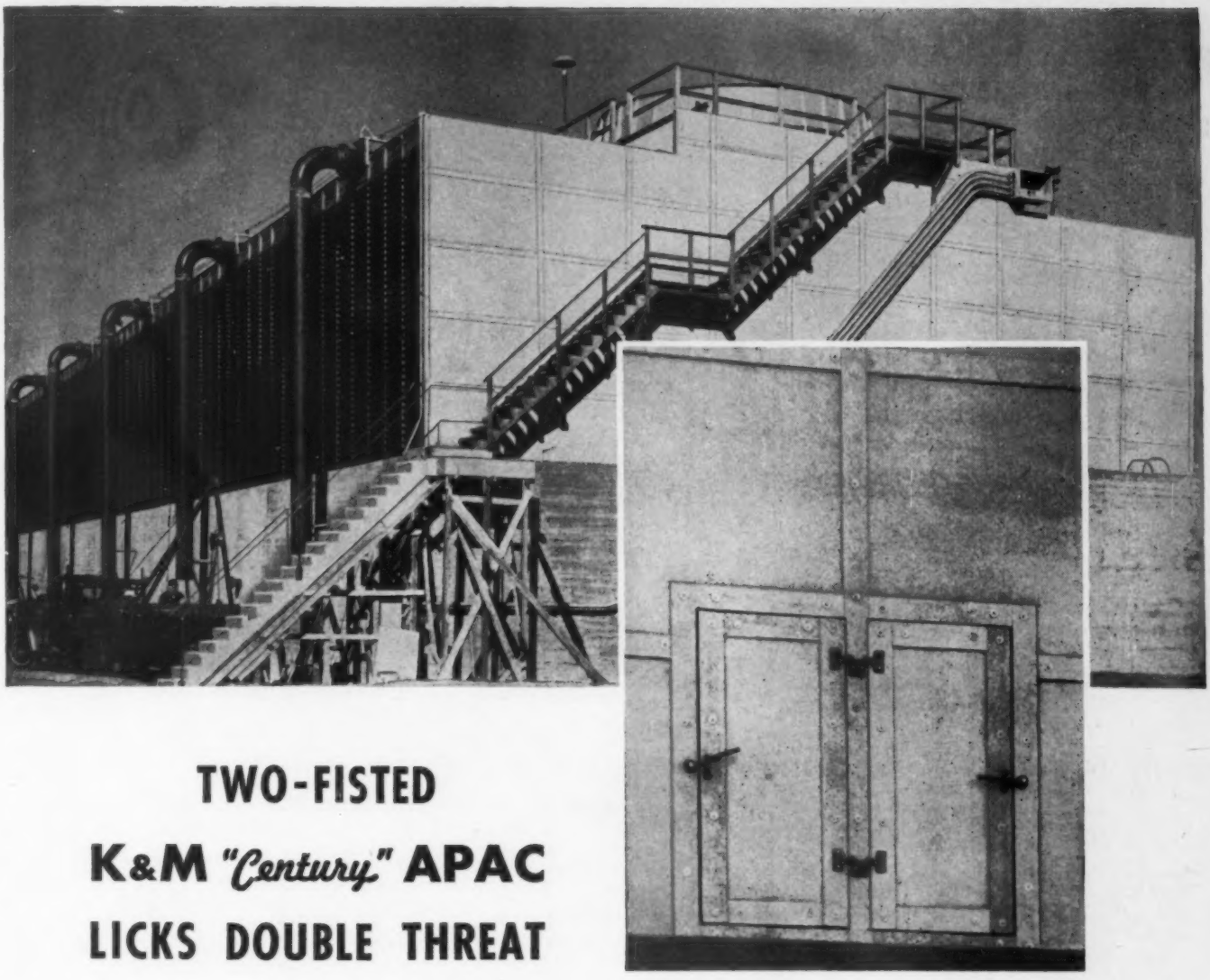
SEC. 5. The unit of electric quantity shall be the coulomb, which is the quantity of electricity transferred by a current of one ampere in one second.

SEC. 6. The unit of electrical capacitance shall be the farad, which is the capacitance of a capacitor that is charged to a potential of one volt by one coulomb of electricity.

SEC. 7. The unit of electrical inductance shall be the henry, which is the inductance in a circuit such that an electromotive force of one volt is induced in the circuit by variation of an inducing current at the rate of one ampere per second.

SEC. 8. The unit of power shall be the watt, which is equal to ten million units of power in the centimeter-gram-second system, and which is the power required to cause an unvarying current of

(*Please turn to page* 214)



TWO-FISTED K&M *"Century"* APAC LICKS DOUBLE THREAT

"Century" ¼" thick APAC ASBESTOS-CEMENT SHEETS were used on this cooling tower at the Mustang Plant of the Oklahoma Gas and Electric Co. Constructed by Marley Co., Inc., Kansas City, Kansas.

Cooling tower temperatures on one side, plus Oklahoma weather on the other, don't bother the K&M APAC Asbestos-Cement Sheets on this job. Always, on any flat surfaces—large or small—outside or inside—K&M APAC is good for years of strictest economy.

APAC sections are large and strong, so that application is simple and quick. Thus erection time and labor costs are sharply reduced. Then comes lasting resistance to every changing season; to fire, rust, rot, rodents and termites. You couldn't have stronger assurance of minimum maintenance. You won't even need painting to preserve the neat, tough APAC surfaces.

For name of your nearest distributor, and all particulars, write to us.

K&M APAC suits your needs . . .

Use it for any flat panels, partitions, sheathing, shaft casings, bins.

Cut it easily to any needed sizes, right on the job.

Apply it over steel or wood girts, wood studs, solid wood sheathing, insulation board.

APAC Standard Sheet Size: 4′ x 8′. Standard Thicknesses: 3/16″, ¼″, 3/8″.

Nature made Asbestos . . .
Keasbey & Mattison has made it serve mankind since 1873.

K&M best in asbestos ®

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

NATIONALLY KNOWN MANUFACTURERS SAVE TIME – MONEY – MANPOWER – HANDLING – with *Standard* CONVEYORS





Photo: Courtesy Minnesota Mining & Mfg. Co.

Wherever packages, parts, or units are handled there is a type of Standard Conveyor—gravity or power, roller, belt, slat, push bar, wheel—portable unit—designed to do each particular job best.

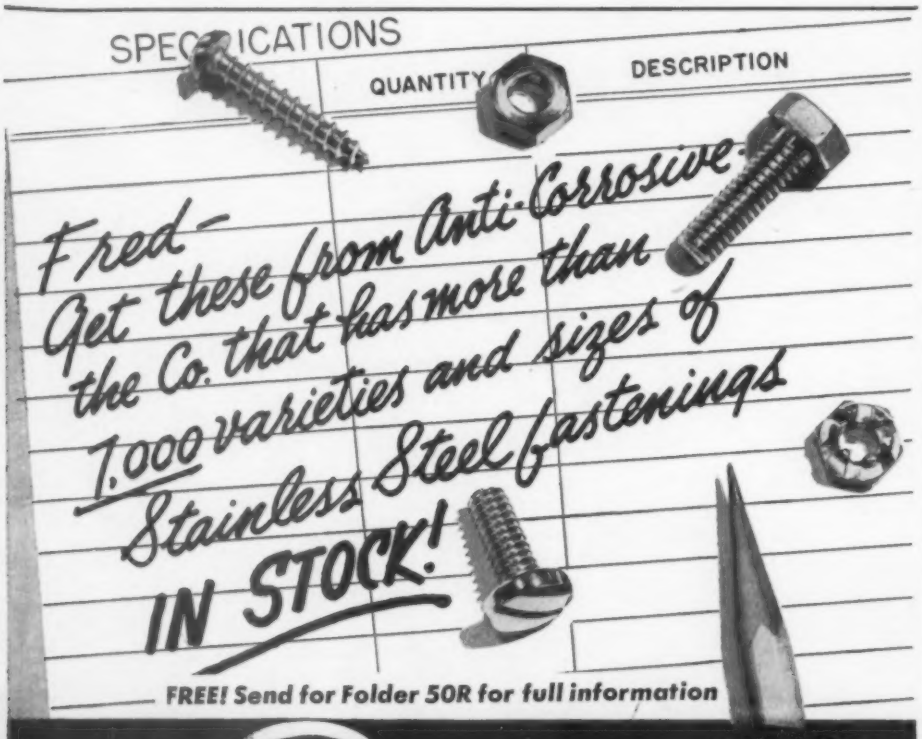
Standard is known to many nationally famous manufacturers as a reliable source for conveying equipment of wide range and versatility. The answer to your needs in cost-cutting, time-saving conveyors can be found at Standard.



Write, telling us what you make or handle. We will send literature showing Standard Conveyors in use in your business. Address Dept. P-100.

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General Offices: North St. Paul, Minn.
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Anti-Corrosive SINCE 1927
Metal Products Co., Inc.
Manufacturers of STAINLESS STEEL FASTENINGS
CASTLETON-ON-HUDSON, NEW YORK

(*Continued from page* 212)

one ampere to flow between points differing in potential by one volt.

SEC. 9. The units of energy shall be (a) the joule, which is equivalent to the energy supplied by a power of one watt operating for one second, and (b) the kilowatt-hour, which is equivalent to the energy supplied by a power of one thousand watts operating for one hour.

SEC. 10. The unit of intensity of light shall be the candle, which is one-sixtieth of the intensity of one square centimeter of a perfect radiator, known as a "block body," when operated at the temperature of freezing platinum.

SEC. 11. The unit of flux of light shall be the lumen, which is the flux in a unit of solid angle from a source of which the intensity is one candle.

SEC. 12. It shall be the duty of the Secretary of Commerce to establish the values of the primary electric and photometric units in absolute measure, and the legal values for these units shall be those represented by, or derived from, national reference standards maintained by the Department of Commerce.

SEC. 13. The Act of July 12, 1894 (Public Law Numbered 105, Fifty-third Congress), entitled "An Act to define and establish the units of electrical measure," is hereby repealed.

WILL NOT SELL STEEL TO GREY MARKET OPERATORS

Benjamin F. Fairless, President of United States Steel Corporation, recently issued the following statement:

Stories have reached us that certain individuals, purporting to be representatives of United States Steel, have stated the willingness of the Corporation and its subsidiaries to sell steel at a premium to certain customers, or otherwise to engage in grey market transactions in these days of heavy steel demand. I want to deny categorically that these individuals have any authority to speak for the Corporation. The policy of United States Steel continues to be one of selling steel only directly to bona fide customers at regular published prices. United States Steel will decline to make further sales to any purchaser who is found to have resold in the grey market steel bought from the Corporation.

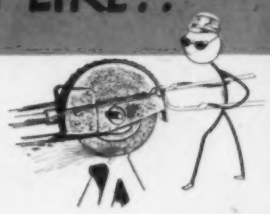
PLANT MAINTENANCE SHOW TO BE HELD IN CLEVELAND

The Plant Maintenance Show, which drew industrial executives from all over the country when it was conducted for the first time early this year, will be held again at the Auditorium, in Cleveland, Ohio, January 15-18, inclusive, according to announcement by Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y., exposition management. Present indications are that it will be two to three times the size of the initial show. Also to be repeated concurrently with the show is the Plant Maintenance Conference.

(*Please turn to page* 218)

WOULDN'T YOU LIKE..

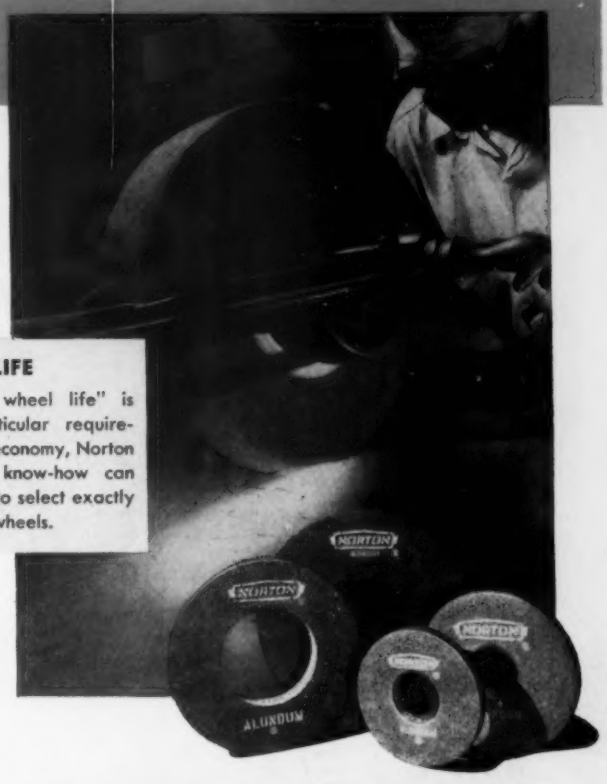
a wheel that would really snag off metal?



AND last forever?



No such wheel has ever been made...



LONG LIFE

If "long wheel life" is your particular requirement for economy, Norton abrasive know-how can help you to select exactly the right wheels.

But **we can supply you with wheels that DO offer Maximum Cutting Action and DO have Extra Long Life!**



FAST CUT

If "fast cut" is the primary requirement which spells economy on your particular snagging operations, Norton engineering can furnish you with wheels that fill the bill.



PRODUCT VARIETY

No matter what combination of cutting action and length of life means *maximum economy* on your grinding jobs—Norton Company, with its engineering skill and wide product variety, can fill your requirements. Norton wheels for snagging operations are available with ALUNDUM, 15 ALUNDUM, 57 ALUNDUM and CRYSTOLON abrasives; with B-5, B-7 and BH resinoid bonds and vitrified bond.



You'll find many helpful rough grinding tips and scores of cost-cutting wheel specifications in the Norton booklet, "Rough Grinding." Send today for Form 1405-B

NORTON ABRASIVES

NORTON COMPANY, WORCESTER 6, MASS. • Warehouses in Five Cities • Distributors in All Principal Cities



NS
WORCESTER
WIRE WORKS
Division
NATIONAL-STANDARD COMPANY

NS
ATHENIA
STEEL
Division
NATIONAL-STANDARD COMPANY

these National-Standard Divisions

specialize in making wire and steel do a better job at lower cost

YOU might be surprised at the roster of leading manufacturers who turn to these National-Standard Divisions for small-size wire and high carbon flat steel for special purposes. The uses are endless—special wire for everything from bottle caps to zither strings . . . steel for countless products from harmonica balancers to surgical instruments and springs for the finest watches.

Perhaps *you* are one of the manufacturers who has found that here research and development dig deeper, go further . . . that here the actual processing of steel and wire is held to a hair line of quality and uniformity.

These things invariably pay off for National-Standard customers in production economies and better product behavior. If you don't *know* National-Standard, or about National-Standard services, we'll be happy to talk over your particular needs or send you a bulletin covering the work and specialties of any of the divisions listed below.

NS
NATIONAL-
STANDARD
Company
NILES, MICHIGAN

DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL	*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD	*Niles, Mich.*	Tire Wire, Fabricated Braids and Tape
REYNOLDS WIRE	*Dixon, Illinois*	Industrial Wire Cloth
WAGNER LITHO MACHINERY	*Jersey City, N. J.*	Lithographing and Special Machinery
WORCESTER WIRE WORKS	*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

Want Additional Product Information? See Page 19.



Striking power distinguishes the Alaskan Brown Bear. Ordinarily shy and timid, he can fell a grown steer with one strike of his paw.

STRIKING POWER

for Faster, Better Jobs.

The Plumb Hammer is the result of years of research. Craftsmen have long recognized the long-lasting dependability of the special analysis steel head. They know the shock-absorbing features of the second-growth hickory handle. And even the casual user soon appreciates spring tempered claws that grip nails tightly.

But the unseen qualities make Plumb the perfect hammer. Force and accuracy have been engineered into the tool. The scientifically distributed weight allows it to act as part of the arm so that even the ordinary blow becomes a sharp, crisp strike. This exceptionally fine balance increases speed while it lessens fatigue.

These qualities mean striking power—the reason the Plumb Hammer does better work in less time.

FAYETTE R. PLUMB, INC., PHILADELPHIA 37, PA.

Quality Comes FIRST

PLUMB

is FIRST in Quality

The black head with the red handle—exclusively PLUMB

HAMMERS · HATCHETS · AXES · FILES

PLUMB

PRECISION PERFORMANCE

For every job

BAY STATE



BAY STATE TAP & DIE CO.

MANSFIELD, MASSACHUSETTS

ON THE NEARBY SHELVES OF INDUSTRIAL SUPPLY DISTRIBUTORS

PARKERSBURG DU PONT PLANT STARTS COMMERCIAL PRODUCTION OF TEFLON

A new unit of the Du Pont Company's plastics plant near Parkersburg, W. Va., has gone into commercial production of Teflon tetrafluorethylene resin, an industrial plastic highly resistant to chemicals and heat and one of the best insulating materials known. The product now sells for $6.50 a pound—it was first sold at $18 a pound.

Teflon offers a combination of chemical inertness, heat-resistance, and electrical insulating properties available in no other material, Du Pont reports. Development of the plastic has given the chemical industry corrosion-proof gaskets and valve packings that are essentially permanent, unless mechanically damaged. The electrical industry uses Teflon as insulation which will withstand continuously temperatures up to 500 deg. F. in motor windings and other applications.

For the next few months the unit will produce granular Teflon only. Further expansion, however, is under way for the manufacture of Teflon suspensoid, a suspension of minute particles of the plastic in a liquid from which wire extrusion compounds and enamels and corrosion-resistant finishes have been developed.

* * *

JAN-P-735 PRIMER ADDS ZINC OXIDE REQUIREMENT

Navy Specification 52-P-18, the zinc chromatic primer that was developed during the war and used extensively on ships, has been modified and its designation changed to JAN-P-735. One of the principal changes to provide even better performance is the appearance of a zinc oxide requirement in the pigment formula specified.

Zinc chromate paints covered by this specification are intended for use as corrosion-inhibiting primers on metal surfaces. JAN-P-735 will be used for procurement by the Departments of the Army, the Navy, and the Air Force.

Zinc oxide content of the new specificiation is fixed at 17.4 per cent of the pigment content in Army-Navy-Air. Force type formula No. 84/47 formula listed below:

Pigment: 46.5%, consisting of zinc yellow 49.4%, titanium dioxide 13.7%, zinc oxide 17.4%, sienna 4.6%, magnesium silicate 13.7%, aluminum stearate 1%.

Vehicle: 53.5%, consisting of alkyd resin solution 56%, dipentine 3.5%, paint thinner 38.1%, lead napthenate drier 2%, cobalt naphthenate drier 0.2%, manganese naphthenate drier 0.2%.

General Requirements: Weight per gallon: 11.0-11.6 lbs. Viscosity: 68-78 krebs units. Time of setting to touch: 2 hours max. Time of drying hard: 6 hours max. Water: not over 0.5%. Flash point: 86°F. min. Color: a clean yellow.

(*Please turn to page* 222)



ELMER E. MILLS

Blown Plastic Bottles



The finest salesmen your products can have!

STOCK BOTTLES

- Lightweight—Unbreakable—Polyethylene available with or without "squeeze" features. Bottles are available in 2-4-6-8-ounce sizes.
- In clear plastic or wide range of colors.
- Stock atomizers with stream-spray or sprinkler features.
- Stock closures and tubing.

Since we make all of these parts, we can facilitate our service to you as a single source of supply.

For more information on our custom molding service, or for a free sample stock bottle, write us or our sales agent today.

SPECIAL BOTTLES

By combining skillful craftsmanship and sound engineering, we are producing specially blown thermoplastic bottles with or without "squeeze" features and in many shapes and sizes. This Helene Pessl "LITTLE LADY" and Manon Freres "PUPPY DOG" are typical examples. We also make closures and atomizers to your special needs.

Our bottles are manufactured under Patent number 2,515,093. Other patents are pending.

ELMER E. MILLS CORPORATION
2930 NORTH ASHLAND AVENUE • CHICAGO 13, ILLINOIS

Sales Agent for United States: W. BRAUN & CO. Chicago: 300 N. Canal St. **New York:** 595 Fifth Ave. **Detroit:** 139 W. Maple, Birmingham, Mich. **Los Angeles:** 6253 Hollywood Blvd.



have you heard?

of the amazing performance of MicroRold

extra light gauge stainless steel

During the current critical nickel shortage MicroRold's close tolerance light gauge sheets offer an excellent opportunity to secure more square feet of stainless steel per ton.

The outstanding uniformity of gauge, found in MicroRold is producing greater area per ton, longer die life and less rejects. Reduced finishing costs are permitted through its excellent surface qualities. Savings in purchase weight are made possible by ordering MicroRold to a decimal thickness with usual MicroRold tolerance of plus or minus 3%. Extra-light gauges are no longer limited to narrow widths — we are supplying sheets up to 36″ wide as light as .010 in thickness and sheets 30″ wide as light as .005.

Why not make use of the exclusive advantages offered by MicroRold extra-light gauges?

WASHINGTON STEEL CORPORATION

Washington, Pennsylvania

INTERNATIONAL *Retractable Anvil* STAPLE MACHINES SAVE YOU MONEY IN EVERY PHASE OF YOUR SHIPPING OPERATIONS

In many cases these savings amount to 50% or more of current shipping expenses. Our machines make such savings possible by securely and neatly closing filled fibre or corrugated cartons from the outside, tops and bottoms simultaneously.

One of our distributors will be happy to show you how an International Staple Machine can profitably fit into your shipping room operations. Write us direct or use the inquiry system set up by this magazine.



PACKING—Save space! Cartons remain flat until ready for use. No bottom sealing necessary.



CARTON CLOSING—Save time! One operator closes 400 cartons per hour. Machine automatically adjusts for variable carton sizes.



SHIPPING—Save prestige—eliminate pilferage—reduce damage claims. Closure meets Consolidated Freight and Postal regulations. Cartons can be re-used by dealers, customers, etc.

•

INTERNATIONAL STAPLE AND MACHINE COMPANY

HAVERTOWN 10, PA.

Distributors in Principal Cities

ASK THESE 7 QUESTIONS

BEFORE YOU PICK

CHEAPEST WAY TO SHIP

"Rates are only part of the answer to What is your Cheapest Way to Ship? To get the complete answer, ask these 7 questions—



1 **Is the service dependable?**

2 **Is it fast?**

3 **Is there a single all-inclusive charge?**

4 **Is pickup and delivery made in all cities and principal towns?**

5 **Is there only one responsibility for any shipment?**

6 **Is a receipt given at both starting point and destination?**

7 **Is valuation allowance liberal?**

Believe me, after my customers ask these questions, they always specify Railway Express."

—says John Heath, Spokane,
3 years an Express Man

For the complete answer to your shipping problem—

ALWAYS ASK

THE EXPRESS MAN!

RAILWAY EXPRESS AGENCY

INEXPENSVE LIGHT COMPUTER FOR INDUSTRIAL PHOTOGRAPHY

Industrial uses of film are reported to take approximately one-third of all picture film produced. In connection therewith, a simple, new and inexpensive computer with which light conditions can be accurately evaluated, especially when professional photography is not warranted, is announced by the American Standards Association, Inc., 70 E. 45th St., New York, N. Y. It is said to offer opportunity for potentially large savings in costs of photographic film for industrial pictures.

The Photographic Exposure Computer is a cooperative development of 45 national technical societies and leading manufacturers of photographic and optical equipment. The value of the computer has been enhanced by the addition of tables for color film, and for transparencies or reversal materials in both black-and-white and color for projection or viewing with an illuminator. The computer is an American Standard method for evaluating light conditions. It consists of a pocket-size booklet containing 25 durable, loose-leaf pages, 3¼ x 4-¾", with a flexible fabricoid cover. On one page is a circular calculator for determining shutter speeds and lens stop or f-number with index numbers obtained from included tables and from the film used. The guide evaluates light intensities and luminance of scenes to be photographed. The calculator combines this index with a film exposure index to indicate proper camera adjustment for a picture.

Copies of the computer are available at $1. each from the Association.

1 1 1

DATA-SHEET CORRELATES ASTM, FEDERAL, ARMY, NAVY SPECIFICATIONS

The Riverside Metal Company Riverside, N. J., announces a new data sheet which correlates ASTM, Federal, Army, and Navy specifications with 40 different Riverside alloys of phosphor bronze, nickel silver, beryllium copper, and cupro nickel.

The sheet indicates to the designer, specification engineer, and purchasing agent which Riverside alloy to specify when working to ASTM, Federal, Army or Navy specs.

The 40 Riverside alloys listed include: (1) phosphor bronze plate, sheet, strip, bridge plate, rod, bar, wire, and shapes; (2) copper-nickel-zinc sheet, strip, rod, bar, and wire; (3) beryllium copper plate, sheet, strip, rod, and wire; and (4) copper nickel sheet and strip.

In addition to correlating the five specification systems the new data sheet gives general characteristics and typical uses of the phosphor bronze, nickel silver, beryllium copper, and cupro nickel alloys.

Copies of the two-color, 8½ x 11 sheets can be obtained, free, from The Riverside Metal Company, Riverside, N. J.

(*Please turn to page* 224)

Only by trying Westinghouse fluorescent lamps will you know what economical top-quality lighting really is



If you're the kind of businessman who values the wisdom of making little savings add up to large ones, then you ought to know about *today's* long-life Westinghouse fluorescent lamps. The many technical advances made on these lamps in the last year or two have resulted in economies really worth having—regardless of the number of tubes you may use.

LAMP DIVISION
WESTINGHOUSE ELECTRIC CORP.
BLOOMFIELD, NEW JERSEY

Gentlemen:

I would like more details on how Westinghouse fluorescent lamps save money for users.

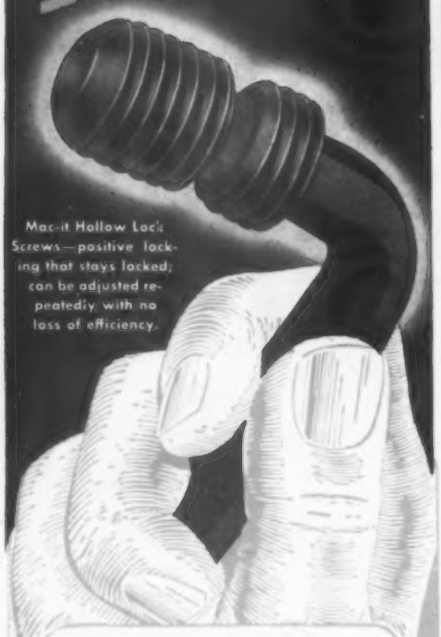
NAME_____

COMPANY _____

ADDRESS _____

P

IT'S A
Mac-it®
PRONOUNCED "MACK-IT"



Better, Faster Service with this *Complete* Mac-it Line!

Because many standard types of Mac-its are available throughout the country for quick delivery, and because specials can be engineered to your own specifications, you'll find it pays to investigate Mac-its *first.*

Mac-it's 35 years' experience in the manufacture of heat-treated, alloy steel screws is your assurance of precision, uniformity and strength. Sold through leading industrial distributors from coast to coast and in Canada. Write for new Mac-it catalog today!

Other Mac-it products include:

- Socket Head Cap Screws
- Hollow Set Screws
- Stripper Bolts
- Hollow Pipe Plugs
- Socket Screw Keys
- Square Head Set Screws
- Hexagon Head Cap Screws

. . . and many others

Marketed Nationally Since 1913 by
STRONG, CARLISLE & HAMMOND COMPANY
Cleveland 13, Ohio

NEW MINERAL-FILLED PHENOLIC MOLDING COMPOUND

A new mineral-filled phenolic molding compound, Durez 14893 Black, featuring excellent heat resistance, exceptionally good finish, extremely fast cure, and a relatively low specific gravity, as compared to most heat-resistant materials, is announced by Durez Plastics & Chemicals, Inc., North Tonawanda, New York.

The new material has good strength characteristics and is suitable for molding around inserts. Molded test pieces which have been baked for 24 hours at 450° F. are actually stronger after the test and retain their unusually high-gloss finish. After 200 hours at 450° F., the surface appearance of the material is still relatively unimpaired. Intermittent exposure to higher temperatures is equally safe.

High-frequency preheating characteristics of Durez 14893 Black are similar to other mineral-filled materials. The material can be molded either by the compression or plunger methods, and its fast cure results in exceptional molding economy.

Durez 14893 Black has been thoroughly field-tested. It is ideally suited for applications where prolonged high temperatures will be encountered or for decorative parts where the best possible surface finish is desired. Complete specifications are available on request.

Properties	Values	
Specific gravity	1.57	avg.
Water absorption—%	0.20	±.01
Flexural strength p.s.i.	7000	min.
Impact strength F.P. per in.	0.26	min.
Distortion under heat °F.	340	min.

ADHESIVES CATALOG SECTION ISSUED BY GOODRICH

Featured by a table which lists by number each adhesive it manufactures, the materials for which they are specifically recommended and the method by which the most effective bond is created, a new eight-page catalog section on "Adhesives" has been published by The B. F. Goodrich Company, Akron, Ohio. Copies are available upon request.

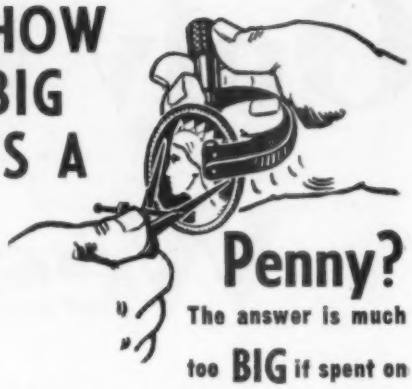
Materials listed are:

Buna N, compounds and coated fabrics; Neoprene, compounds and coated fabrics; natural and GRS rubber, compounds and coated fabrics; sponge and foam rubber; laminating materials, metal foils, cellophane, coated paper, films, etc.; plastics; paper, cardboard, boxboard; leather; duck, cloth, felt, flock; wood, Masonite, Formica and linoleum and metals.

The catalog section also describes each adhesive, cites the recommended uses, tells the method of application, color, drying time, weight per gallon, total solids and thinner used, as well as listing the specifications including those of the army and navy, that it meets.

(*Please turn to page 226*)

HOW BIG IS A



Penny?

The answer is much too BIG if spent on products that do not meet your needs.

Specify STEINEN

- SCREW MACHINE PRODUCTS
- STAMPINGS — Fibre—Phenolite, Metal—Plastic
- ASSEMBLIES — Sub.—Complete

and save through better quality.

Send Us Your Inquiries

WM. STEINEN MFG. CO.

49 Bruen St. MArket 2-5747 — STEINEN — Newark 5, N. J. Since 1907

HINGED PLATEGRIP BELT FASTENER No. 500

For Heavy Conveyor Belts of changing length

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from ⅜" to ½" thickness. They offer special advantages in mines, quarries or industrial set-ups where length or position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

Write for Circular



ARMSTRONG-BRAY & CO.
5394 Northwest Highway CHICAGO 30, U. S. A.

For easier, better welding...

GRINNELL WELDING FITTINGS

A qualified welder can make welds quickly and easily with Grinnell Welding Fittings. These fittings are made by a hydraulic forging process that assures uniform wall thickness at all points and true circularity throughout. Of seamless, one-piece construction, they can be cut at any angle to match up with standard weight, and extra strong and heavier wall pipe in I.D. or O.D. sizes. Pressure-temperature ratings are equal to or greater than those of seamless steel pipe. Grinnell Welding Fittings are process stress-relieved.



Permanent Identification

Each Welding Fitting bears a metal plate giving size, wall thickness, material and name for easy, positive identification.



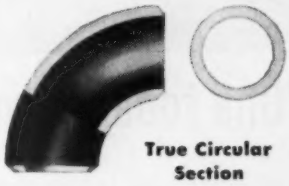
Full Length Outlets

Full length outlets permit fast lining up and ample room for rod manipulation; keep high welding heat away from vital crotch zones.



Uniform Wall Thickness

Uniform wall thickness at all points permits perfect lineup with pipe, O.D. and I.D. No thinning of long outer wall . . . no thickening of short inner wall. Complies with code requirements.



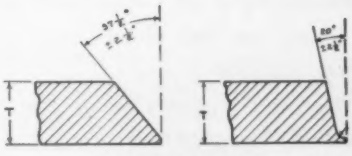
True Circular Section

True circular section at all points makes fitting easy to align and weld . . . no distortion or flattening to affect flow adversely.



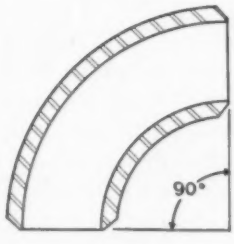
Plain Circumferential Butt Welds

Grinnell Welding Fittings confine all welds to plain circumferential butt welds — with their inherent strength and simplicity.



Accurate Bevels

Accurate bevels aid aligning and welding. Standard straight bevel for thickness (T) 3/16 to 3/4 inch inclusive. Standard U-bevel for thickness (T) greater than 3/4 inch.



True Included Angles

True included angles permit fabrication and erection of complicated piping systems to exact measurements.



Send for copy of this new catalog showing the complete line of Grinnell Welding Fittings and Forged Steel Flanges.

100th ANNIVERSARY — WHENEVER PIPING IS INVOLVED

GRINNELL

Grinnell Company, Inc., Providence, R. I. Branches: Atlanta • Billings • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Pocatello • Philadelphia • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

Want Additional Product Information? See Page 19.



"One today is worth two tomorrows."

—Ben Franklin's Almanac, 1757

Until crystal balls become standard equipment for ye Board of Directors, there is no substitute for a nice profit showing on ye quarterly statement.

—Acme Steel Notebook, 1950*

Thrift and efficiency belong in business—not alone because they are good, solid business virtues.

They can also mean the difference between profit and loss.

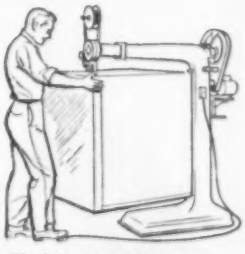
Helping business to greater thrift and improved efficiency has been the reason for Acme Steel methods and Acme Steel products for more than 70 years. We are now working with more than 50,000 customers representing almost every industry, particularly in departments and operations concerned with packaging, shipping, materials handling.

If you would like to learn more about Acme Steel products and how they may be able to help you, write on your business letterhead and ask for free booklets on the specific products in which you are interested.

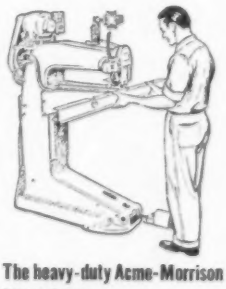
ACME STEEL COMPANY

Dept. P-100, 2838 Archer Ave., Chicago 8
There are 46 Acme Steel service offices in the principal cities of the U.S. and Canada.

**The sagest maxims of Ben Franklin, together with modern parallels, appear in Acme Steel Notebook, 1950. We have a free copy for you. Just ask for it.*



Big jobs no problem. Acme Silverstitchers are saving time, space, money, throughout the textile industry.



The heavy-duty Acme-Morrison Metal Stitcher is used extensively in assembling parts in the aircraft industry.

ACME STEEL CO. CHICAGO

ACME STEEL

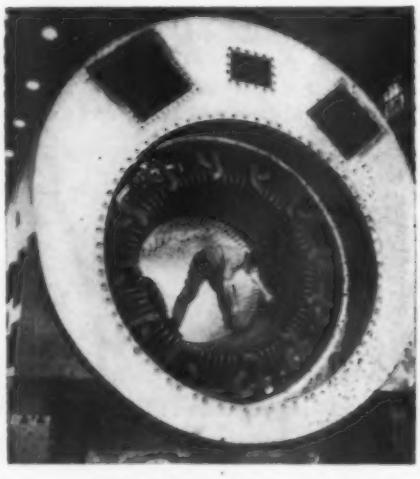
Acme Steel Company has enjoyed sound, steady growth under the American business system of open competition. Since 1901 we have made 285 consecutive dividend payments to our stockholders.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVERSTITCHER machines • ACME SILVERSTITCH stitching wire • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slat stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, cutters, punches, tool mounts, reel stands, coil holders, coil trays.

DEVELOP IMPROVED INSULATION FOR ELECTRIC GENERATORS

Development of a radically new electrical insulation that makes possible construction of bigger electric generators was announced recently. Speaking before the Great Lakes District Meeting of the American Institute of Electrical Engineers, Graham Lee Moses, manager of the Westinghouse Electric Corporation Development Insulation Section at East Pittsburgh, said tests indicate life of the new insulation to be at least 10 times as great as previous insulations under conditions of severe electrical stress.

Called Thermalastic, the new insulation consists of mica flakes embedded in tough, heat-resistant synthetic resin with sufficient stretch at operating temperatures to expand and contract with the generator coils. This has been found to be superior to previous insulations in nearly every physical, chemical, and electrical characteristic.



This 100,000-kw generator has Thermalastic insulation

Thermalastic forms a tough, flexible electrical barrier with unusual properties. Under heat it expands only one-fourth as much as asphalt-bonded insulation. At 100 degrees C it has 30 times the tensile strength of conventional insulations; it has a life more than 10 times as great at a given voltage; electrical insulation losses are reduced by about 70% and its electrical strength is more than 20% greater. The new insulation was designed primarily for high-voltage electric generators and now is being used on all large Westinghouse steam-turbine generators. Other applications are being considered.

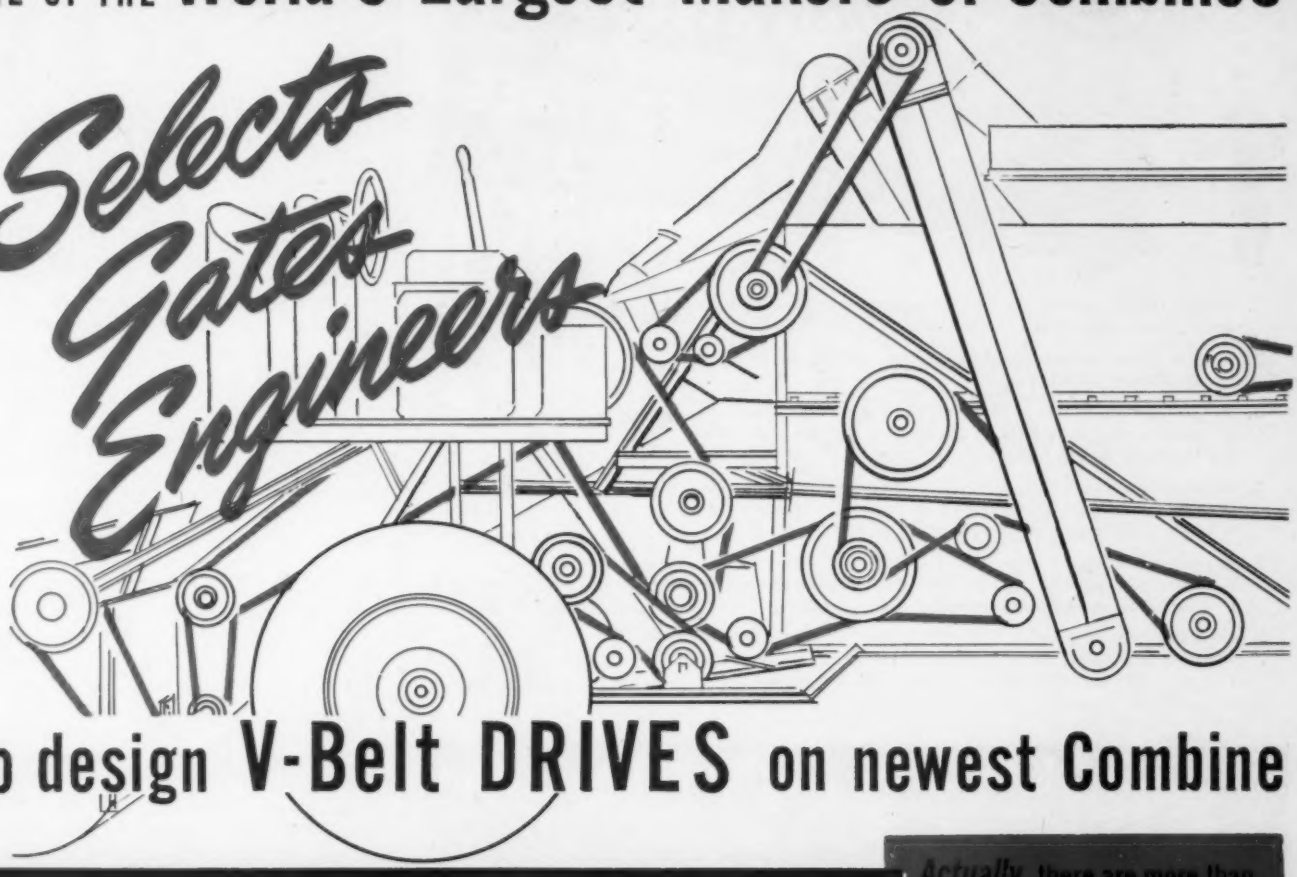
WESTERN SOFTWOOD PLYWOOD COMMERCIAL STANDARD

Commercial Standard 122-49, (superceding CS122-45), is announced by the National Bureau of Standards, U. S. Department of Commerce. Copies are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at 10¢ each.

(*Please turn to page* 228)

ONE OF THE World's Largest Makers of Combines

Selects Gates Engineers



to design V-Belt DRIVES on newest Combine

A Completely V-Belt Driven Combine . . . Every drive of the most advanced design

In order to reduce the wear and tear of operating his combine, the manufacturer wanted every moving part that was subject to shock to be "cushioned" by the **shock-absorbing** properties of a V-belt Drive—and he wanted to be sure that every V-belt Drive embodied the most advanced engineering design.

He knew that the Gates V-Belt testing laboratories are by far the largest in the world—that Gates runs an average of 32,000 hours of testing every **week** on V-Belts alone! (32,000 hours is equivalent to five years of life for one belt.)

And he knew that Gates hadn't stopped with testing—that Gates Research Engineers had actually reduced the **results** of these tests to **usable data** for the design of every V-belt Drive.

This intensively SPECIALIZED Research has naturally given Gates Engineers a most advanced knowledge of V-Belts and V-Belt Drive Design—and the benefit of this advanced knowledge and experience is available to **you, right in your own plant, any time you want it!**

Whether you have a difficult drive to design—whether some V-Belt drive in your plant is giving trouble—or whether you merely want to know what size and construction of V-Belts will give the most efficient and the lowest cost service on a particular drive—you have only to phone a Gates Engineer.

Actually, there are more than a dozen GATES V-BELT DRIVES on this One Combine!

Some of them you can't see, no matter what view of the Combine is given. Every one of these drives had to be of the most advanced engineering design to insure superior service.

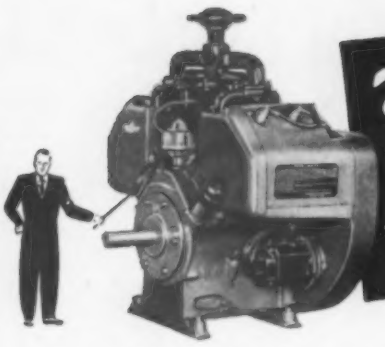
Gates Eng-509

The Mark of SPECIALIZED Research

There is always a Gates Field Engineer near you in all industrial centers. Just look in your phone book under "Gates Rubber." He will come to you promptly—and he will put at your service the full benefits of Gates unrivaled V-belt knowledge and experience **without the slightest obligation!**

THE GATES RUBBER COMPANY
The World's Largest Makers of V-Belts.
DENVER, U. S. A.

GATES VULCO ROPE DRIVES
Engineering Offices and Jobber Stocks IN ALL INDUSTRIAL CENTERS of the U. S. and 71 Foreign Countries

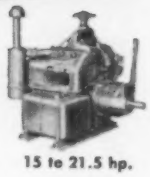


Why WISCONSIN FOUR-CYLINDER Air-Cooled ENGINES ARE ALL V-TYPE

1. V-type design provides a more compact power package for easier, more adaptable installation on original equipment.
2. V-type design means lighter weight, adding to ease of handling and mobility.
3. V-type design provides most efficient air cooling — the air blast travels only half as far as required for a 4-cylinder "straight-in-line" engine.
4. More uniform cooling of V-type engines assures more economical and smoother engine performance; lower maintenance cost; longer engine life.
5. V-type cylinders are cast in pairs, 2 cylinders to a block, thus greatly reducing replacement cost if and when that should be necessary and simplifying servicing.

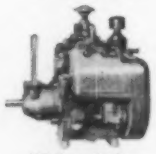
Wisconsin V-type 4-cylinder design is typical of the advanced engineering know-how that goes into all Wisconsin Engines . . . 4-cycle single cylinder, 2-cylinder and 4-cylinder models, in a complete power range from 3 to 30 hp. Write for detailed data.

V VE-4



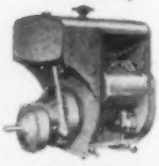
15 to 21.5 hp.

V VF-4



17.5 to 25 hp.

V VP-4



26.8 to 31 hp.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

ELECTRIC WHEELS

Designed to do the Job



Wheels and Axles are our business, and our engineers are well qualified to recommend the most efficient assembly for your product.

Our factory is modern and tooled for low cost production. We have supplied manufacturers in many different industries for more than 50 years.

Standard or Special, ELECTRIC Spoke-type or Disc Wheels are built for most types of portable equipment.

Send us your specifications and we will submit our recommendations.



ELECTRIC WHEEL CO., 2913 Pine, Quincy, Ill.

MAGNESIUM ANODES USED TO PREVENT UNDERGROUND CORROSION

Underground corrosion caused by the galvanic action between adjacent areas of the same or different metals is a stealthy and costly destroyer of property. It is estimated that pipeline replacements necessitated by such corrosion run to $200,000,000 annually. Estimates of all such losses including structures other than pipelines run as high as a billion or more per year.

Corrosion of metal pipes, tanks, and other structures leads to leaks of oil, gasoline, and other fluids or gases which on the one hand are costly and on the other hand present fire and explosion hazards when liberated from their proper places. These losses and accidents, together with the time necessary to effect repairs, are collateral losses of corrosion.

Such corrosion is not necessarily due to any inherent weakness in the metal itself, but rather due to chemical action between various areas of the metal and the chemicals in the soil which in effect results in the formation of numerous tiny batteries. Corrosion occurs in whatever metal or area of a metal happens to be the anode in such a battery.

Protection of valuable underground installations against this reaction is economically afforded by low-cost magnesium anodes which are consumed in lieu of the anodic metal in the structure. Magnesium is the most highly anodic of all commercial metals, and as a sacrificial or expendable anode will, when properly installed, protect all common structural metals.

A new folder published by Federated Metals Division describes the cause of underground corrosion and the simple inexpensive way to long-term protection by the use of magnesium anodes. Copies may be obtained by request to Federated Metals Division, American Smelting and Refining Company, New York 5, New York.

* * *

TECHNICAL BIBLIOGRAPHY ON SERVICEABILITY OF FABRICS

The serviceability of fabrics is the subject of a technical bibliography just released to the public through the Office of Technical Services of the U. S. Department of Commerce.

The bibliography, prepared by the Philadelphia Quartermaster Corps Technical Library, provides descriptive references on 168 studies, encompassing both field deterioration tests and laboratory investigations of wear and abrasion. Materials included cover the period 1936-1949. An author index is included.

PB 110 281, *The Serviceability of Fabrics*, 54 pages, sells for $1.50. Orders should be addressed to the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., accompanied by check or money order payable to the Treasurer of the United States.

(*Please turn to page* 230)

GOOD CONNECTIONS ARE IMPORTANT...



especially in BUSDUCT Distribution Systems

PLUGIN Ⓕ BUSDUCT

Is available in standard 10 foot sections . . . also special lengths . . . 250 to 1000 Amps., 600 volts or less; 2, 3 and 4 conductors, with 30, 60, 100 and 200 Amp. Ⓕ Plugin devices.

Good, dependable connections are a big feature of PLUGIN Ⓕ BUSDUCT. This results from the fact that all joint connection contact surfaces are ground smooth, and then heavily electro silver-plated *by immersion.*

Heavy brass jam bolts—two for 2″ wide copper and less . . . four for widths up to and including 4″—with heavy phosphor bronze compression washers, are used to fasten bus bars. Bolt holes are elongated to allow for expansion and contraction.

These two Ⓕ features of joint connections reduce to a minimum voltage drop and heating, which impair efficiency.

If you are interested in more efficient, economical and flexible power distribution, or if you want to expand your present production facilities, let your nearest Ⓕ Representative (he's listed in Sweet's) tell you how to do it quickly and easily with PLUGIN Ⓕ BUSDUCT or ask for Bulletin 701.

FA TRADE MARK

Frank Adam Electric Co.

ST. LOUIS 13, MISSOURI

Makers of BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER

You know how to operate this extinguisher JUST BY LOOKING AT IT!



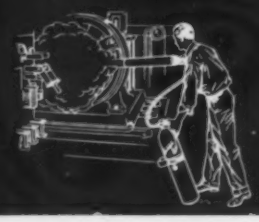
It's a Randolph!

The *first 10 to 30 seconds* can mean the difference between *no loss* and *complete destruction* when fire starts. That's why Randolph's simple, *obvious* operation is so important in stopping fires *before* they spread!

Anybody can get a Randolph into action FAST! No valves to turn, no nozzles to adjust; just point and press your thumb! Randolph's snowy CO_2 is non-damaging, evaporates without a trace. It's non-toxic, won't conduct electricity, deteriorate or freeze. Underwriters' Approved.







A COMPLETE LINE OF CARBON DIOXIDE EXTINGUISHERS AND AUTOMATIC SYSTEMS

Learn how Randolph gives your plant better *preventive* fire protection! Write Randolph Laboratories, Inc., 1 East Kinzie St., Chicago 11, Illinois.

Randolph
SIMPLIFIED FIRE EQUIPMENT

NEW NON-METALLIC BALL MILL GRINDING MEDIUM

Announcement of the development of Borundum, a new non-metallic ball mill grinding medium is made by the U. S. Stoneware Co., Akron, Ohio. Borundum is heavy, hard and tough, resembling synthetic sapphire in composition. It weighs 75-80% more and is up to 50% harder than conventional media such as porcelain balls or flint pebbles. The units have a tubular shape which provides



The new ball mill media is said to grind 83% more material than porcelain balls in equivalent grinding time.

greater contact area, and their relatively smaller size (13/16" OD by 13/16" long) was selected after lengthy tests as the most effective size for both large and small capacity mills. Borundum's dense, non-absorbent body and its white, smooth easily washed surface permits its use interchangeably in grinding various materials without danger of inter-material contamination.

HANDBOOK ON MATERIAL HANDLING WITH INDUSTRIAL TRUCKS

"Handbook of Material Handling with Industrial Trucks" is title of 72-page practical guide for the analysis of material handling operations and the application of the unit-load method with power-operated industrial trucks and accessories, just released by the Electric Industrial Truck Assn., Beury Bldg., 3701 N. Broad St., Philadelphia 40, Pa.

Divided into four sections, the book contains: 1. The Evaluation of Industrial Truck Handling; 2. Material Handling Management, with subsections devoted to the preparation and use of flow process charts, handling operations in production, handling in storage, the use of unit loads in storage, with layouts, commodity and capacity factors, etc.; 3. The Organization of an Industrial Truck System, and 4, Practical Truck Engineering.

The different types of industrial trucks are described, as are skids, pallets and other load carriers. Sections cover such subjects as measuring handling costs, routing and dispatching, storage batteries, and operator training.

Complimentary copy will be sent to executive officials of any industry making application on company letterhead to Dept. PR. Electric Industrial Truck Assn., 3701 N. Broad St., Philadelphia 40, Pa. Otherwise copies are $1.00 each.

(*Please turn to page* 232)

Need to see a man about a SPRING?



38 factory-trained field men in constant circulation!

WALLACE BARNES COMPANY
BRISTOL, CONNECTICUT

THE WILLIAM D. GIBSON COMPANY
1800 CLYBOURN AVE. CHICAGO 14,

RAYMOND Manufacturing COMPANY
CORRY, PENNSYLVANIA

BARNES - GIBSON - RAYMOND
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U. S. DIVISIONS OF
ASSOCIATED SPRING CORPORATION
AND CANADIAN AFFILIATE

CAN YOU GUESS THE ANSWERS?

HOW DO METALS COME FROM THE SKY?

METEORITES, CONTAINING VARYING PROPORTIONS OF IRON AND NICKEL, COME FROM "OUT OF THIS WORLD." MUCH HAS BEEN LEARNED ABOUT THE STRUCTURE OF METEORITES THROUGH HARDNESS TESTS, USING A TUKON TESTER—MADE ONLY BY WILSON MECHANICAL INSTRUMENT COMPANY, AN **ACCO** ASSOCIATE.







WHAT IS DIGESTED BUT NEVER EATEN?

WOOD PULP IS "DIGESTED" BY COOKING IN HOT SOLUTIONS DURING THE PROCESS OF MAKING PAPER. MUCH OF PAPER MAKING INVOLVES THE CONTROLLED FLOW OF WATER, STEAM AND CHEMICAL SOLUTIONS THROUGH PIPING. THIS REQUIRES MANY, VARIOUS AND HIGH QUALITY VALVES—SUCH AS THOSE MADE BY **ACCO's** R-P&C VALVE DIVISION.



ACCO makes many products for Industry, Agriculture, Transportation and the Home

AMERICAN Chain
TRU-LAY and LAY-SET Preformed Wire Rope
TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft
TRU-STOP Emergency Brakes
PAGE Chain Link Fence, Wire and Welding Rods
CAMPBELL Abrasive Cutters
READING Steel Castings
READING-PRATT & CADY Valves and Fittings
PENNSYLVANIA Lawn Mowers
MARYLAND Bolts & Nuts
"ROCKWELL" Hardness Testers
WRIGHT and FORD Hoists
HELICOID Pressure Gages
MANLEY Automotive Service Equipment
OWEN Silent Springs

ACCO

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COLORIMETRY—BOOKLET BY NATIONAL BUREAU OF STANDARDS

Manufacturers concerned with color measurement will find much helpful information in a new booklet, Colorimetry, recently published by the National Bureau of Standards. For the past 20 years the Bureau has played a leading part in establishing practical working standards of color and in setting up and administering color tolerances. As a result, conformity to a color requirement can now be determined with the same assurance as mechanical properties. The booklet describes standards and measurement methods developed by the Bureau, giving the basis for each technique and showing clearly how one method supplements the others. Chapters cover the following topics: the standard observer; illuminants and coordinate system; small-difference colorimetry; material standards of color; one-dimensional color scales; and general methods.

Circular C478, Colorimetry, by Deane B. Judd, 56 large double column pages, illustrated, 30¢ a copy, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25 D. C. Remittances from foreign countries must be in United States exchange and include an additional sum of one-third the publication price to cover mailing costs.

ARMCO DEVELOPS SUPER-THIN STEEL ALLOY

Steel so thin it takes 10 layers to equal the thickness of a human hair, is a new product of the Research Laboratory of Armco Steel Corp., Middletown, Ohio. Need for this super-thin alloy with special magnetic properties came with the development of high frequency electronic equipment. A tiny mill built for the job features rolls only 5/16" in diameter which are called upon to support pressures measured in tens of thousands of pounds. The alloy is first reduced to a thickness between .006 and .002 of an inch on a larger mill. After successive passes through the special mill the alloy has been elongated some 400 times and reduced in thickness to .00025 of an inch.

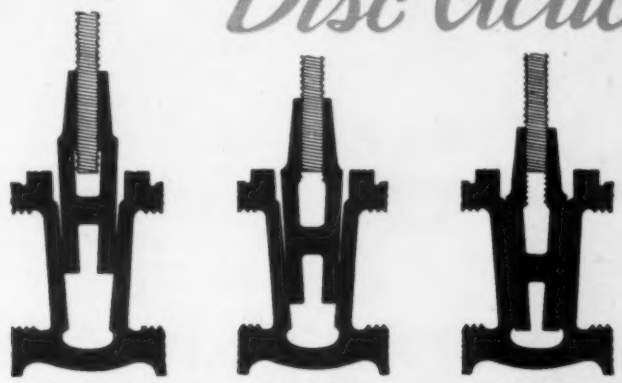
ANNOUNCE MUSIC WIRE FROM SWEDISH ROD

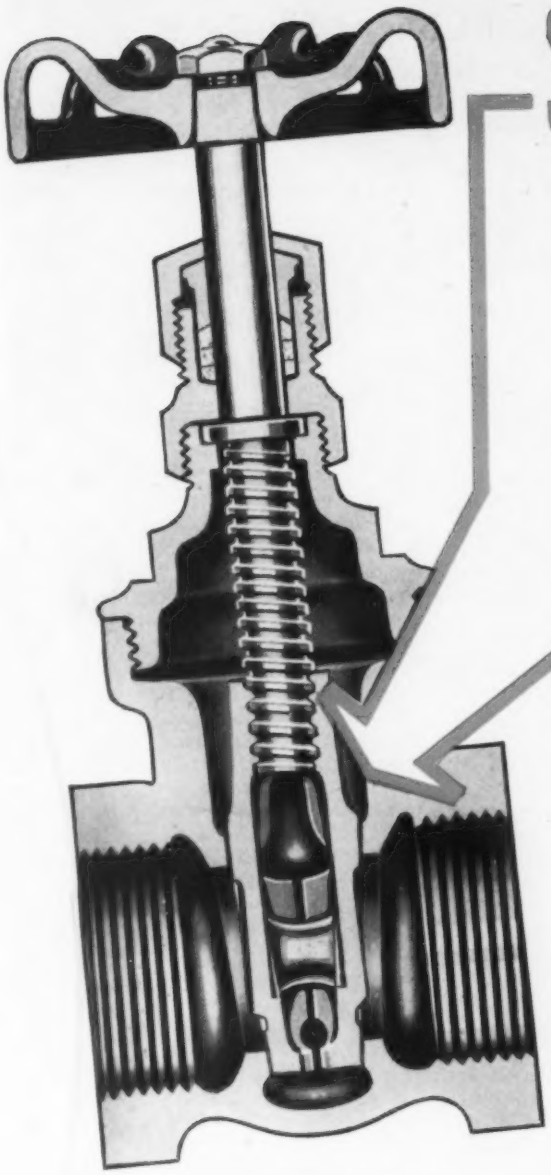
Announcement is made by Johnson Steel & Wire Co., Inc., Worcester, Mass., of the production of music wire from imported Swedish rod, statement being made the new steel, an electric furnace production, will result in more uniformity. The music wire is used to a large extent for small high grade wire springs and wire forms difficult of formation and with exacting service requirements. The range of sizes runs all the way from .003",-38,026 ft. to the pound, up to .200"-9 ft. to the pound.

(*Please turn to page* 234)

SQUEEZE PLAY

Disc Action





Makes O-B Gate Valves--

LEAKTIGHT . . .

Not even gasoline or light oil can get by the O-B Flexitite Disc®. Due to its special split-wedge design, the outer edges of the Flexitite Disc have a slight springing action, which permits the disc to be squeezed slightly between the seat faces. This springing action (exaggerated above) enables the disc to adjust itself and conform perfectly to the matching surfaces of the seat. Minor irregularities are thus nullified and the perfect metal-to-metal seal yields 100 per cent leaktight closure on all types of general service.

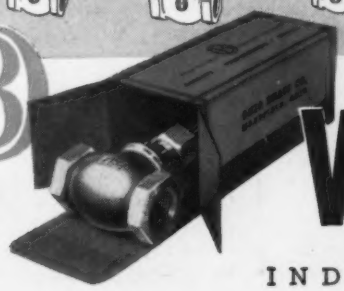
COMPLETE LINE OF VALVES

In addition to gate valves, your local Ohio Brass Distributor carries a complete line of O-B globes, angles, checks, and special valves for low and standard pressure lines.

OHIO BRASS CO. MANSFIELD, OHIO

4019-V





Ohio Brass VALVES

FOR DOMESTIC AND INDUSTRIAL USE



Do you pay more than the price for fasteners? ...you can pay much less!

The first cost of a fastener is low when compared to the cost of your product.

But—first cost of an inferior fastener isn't final cost in terms of assembly time.

A cheap fastener may cost more than you can afford. That's why it pays to buy good fasteners.

Scovill Makes Good Fasteners

A PRODUCT OF SCOVILL

Recessed Head Screws • Sems
Tapping Screws • Standard
Machine Screws • Special Cold
Headed Parts

SCOVILL FASTENERS

Industrial Fastener Sales, Waterville Division
Scovill Manufacturing Co., Waterville 14, Conn.

Montclair, N. J. • Detroit • Wheaton, Ill.
Los Angeles • Cleveland • San Francisco

The Current Copper Situation

BY C. DONALD DALLAS
Chairman of the Board
Revere Copper and Brass Incorporated

We hear a good deal these days about a shortage of copper. More precisely, what we have been experiencing is an abnormally high demand — abnormal even by the standards of the high level of business of the post-war years.

Actually, more copper is being produced than at any peacetime period. Unless interrupted by strikes or other unpredictable forces, primary and secondary (from scrap) production of domestic copper this year will run to more than 1,000,000 tons, against 908,000 in 1949 and 981,000 tons in 1948. The peak year was 1943, when 1,195,000 tons were produced domestically. Despite a costly strike in Chile, imports of copper likewise this year are at the highest peacetime levels; through June they were 327,000 tons (excluding scrap), against 235,000 tons in the like period of 1949.

There is, accordingly, more copper available for industry than in any recent years. But industrial demand is at a very high level, and exports of copper in the form of scrap, ingots and finished copper continue in a volume approximating 15 per cent of domestic output. These needs plus other influences such as Government stockpiling, the copper tariff and the Korean war, combine to create the present situation.

Government stockpiling has been increased and no doubt will continue for some time to add materially to the demand for copper.

The uncertainty of the spring and early summer months as to whether Congress would act to continue the suspension of the copper tariff made buyers apprehensive and led to considerable speculative withholding of the metal from the market in the hope of higher prices. When the tariff exercised its inflationary influence, prices did advance and tended to bring more metal, particularly scrap, to the market.

The short range effect of the tariff is simply to increase prices. We have been told again and again that such higher prices will encourage still more domestic production. We doubt that this will be a fact, for unquestionably recent prices have been high enough to encourage peak production both here and abroad.

In 1943, seven mining companies produced 93 per cent of all the domestic copper and 210 mines produced only 7 per cent, so it is quite obvious that despite high prices, Government subsidies, and the like that we cannot count on any substantial copper tonnage from the high cost marginal operators.

In the long range, the effect of the tariff will be to discourage foreign production and bring the copper market into the monopolistic control of a few domestic producers. For this reason consumers will continue to fight for tariff-free copper.

The effect of the various current influences has been to cause increased buying by the ultimate consumers of copper. Fabricators have tried to meet these demands by buying every pound of copper available and by drawing on their inventories. Most of the fabricators and producers have reduced their inventories to the danger point, and now both fabricators and producers are obliged to ration their customers; in many cases lack of sufficient copper has caused fabricators to curtail their operations.

This is true despite the fact that increased military needs, except for stockpiling, do not at this time appear to be actually contributing seriously to the normal demand. There will certainly be an upturn in these needs eventually, unless the international atmosphere clears, although the pattern of copper consumption in the next war, if it occurs, will not necessarily be similar to that of the last war.

The indisputable fact is that we need every pound of copper we can get, both domestic and foreign. Chilean copper, our principal import, probably costs laid down in the United States $100 a ton more than the great bulk of our domestic production. There is no need for "protection" and obviously the imposition of a copper tariff of $40 a ton has been a great mistake.

* * *

FLAME-SPRAY POLYETHLENE COATINGS ON TANKS AND EQUIPMENT

A method of flame spraying polyethylene coatings on steel tanks, tank cars and processing equipment has been perfected by Houghton Laboratories, Olean, New York. Claimed to give greatly improved corrosion protection, the Houghton flame spray process uses no solvents and applies coatings in thicknesses from 1/32" to ¼".

After the tank to be coated has been sand blasted, polyethylene in powder form is blown through specially designed flame spray equipment. Deposited on the tank in melted form, the polyethylene sets up to a tough, non-porous film which has unusual resistance to practically all chemicals and corrosive materials.

According to the manufacturer, this radically different method of applying protective coatings eliminates danger of pin holes and other defects which might permit corrosion to start. The resulting odorless, taste-free, completely non-toxic coating is recommended for use in chemical, food, petroleum and metal working industries wherever severe corrosion problems exist.

Considerable laboratory and pilot plant data are available on the process which has been in development for two years. Houghton Laboratories will coat existing equipment, supply new coated tanks or furnish equipment and personnel for coating field applications.

Want Additional Product Information? See Page 19.

Eaton Permanent Mold Gray Iron Castings

for
DOMESTIC APPLIANCE PARTS



- Free machinability
- Uniform structure throughout the casting
- Good tensile strength
- Freedom from growth and segregation
- Ability to take a high surface finish

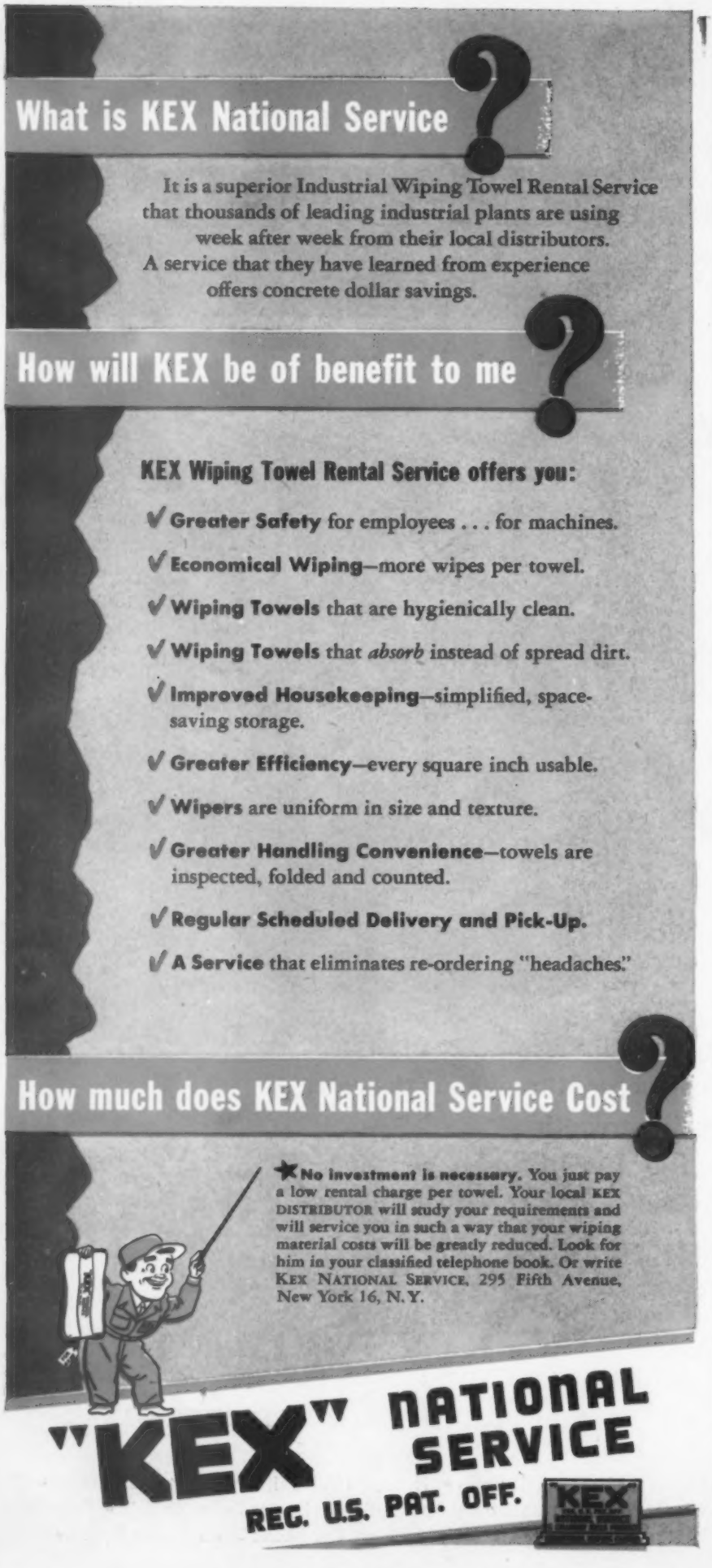
Send for your copy of the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."

EATON MANUFACTURING COMPANY

CLEVELAND, OHIO

FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers



DEVELOPMENT OF NATIONAL BUREAU OF STANDARDS CASTING RESIN

As a result of National Bureau of Standards developments in the fields of specialized electronic components, a special casting resin was developed to improve the stability and ruggedness of electronic circuits. These circuits are built without a chassis for the sake of lightness and compactness. A circular recently published by the National Bureau of Standards and available from the Government Printing Office describes methods used in determining the necessary properties of this casting material in addition to formulae and preparation techniques.

A casting resin was needed with low viscosity, low coefficient of expansion, low dielectric constant and power factor, and high leakage resistance. Many commercial resins were tested, but failed to meet all of these minimum requirements. The casting material had to become hard upon polymerization, but could not shrink excessively or damage to the delicate electronic components would result. This circular describes test procedures and results, and presents illustrations of apparatus used in the preparation of this resin.

Circular 493, *Development of the National Bureau of Standards Casting Resin*, 10 large double-column pages, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 10 cents a copy. Remittances from foreign countries should be made in United States exchange and must include an additional sum of one-third the publication price to cover mailing costs.

* * *

FLEXIBLE TUBULAR STANDARDS ELECTRICAL INSULATION

A new NEMA standard to aid users in the proper selection and purchase of flexible tubular products for electrical insulation purposes is now available, according to the National Electrical Manufacturers Association.

Varnished tubing and sleeving is braided from nylon, glass, rayon, cotton, or other fibers, and then treated with electrical insulating materials. This results, according to the manufacturers, in a flexible tubular dielectric tubing or sleeving which is eminently satisfactory and widely used for insulating wires on electrical apparatus and appliances, such as motors, transformers, radios, television, fans, controls, instruments, etc.

The new standards contain information on the classes, grades, color, appearance, length, tolerance on cut pieces, inside diameters, and measurement of flexible varnished tubing and saturated sleeving. An entire section is devoted to sampling, conditioning of specimens and to the following tests: dielectric, heat aging, transformer oil, heat endurance, and burning.

To aid users of the standards, a table giving the identification of grades and a

(*Please turn to page* 238)



YOU GET ALL 3 WITH CHASE SHEET BRASS

CHASE brass sheet is uniform in gauge, temper and surface. It is quality metal with accurate widths, straight, smooth edges and clean, flat surfaces. And the same degree of close supervision and critical inspection also goes into every bit of Chase copper or bronze alloys made in strip or roll form.

Shortages are making it difficult to accept all orders and provide top-notch service, but we are doing our best to meet the demand with the facilities of our mills and warehouses.

Chase *the Nation's Headquarters for* BRASS & COPPER

WATERBURY 20 CONNECTICUT — SUBSIDIARY OF KENNECOTT COPPER CORPORATION

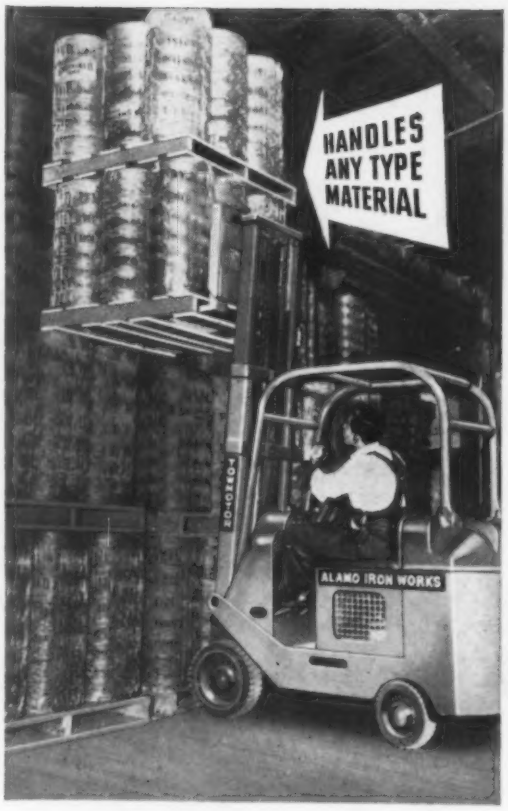
THIS IS THE CHASE NETWORK . . . *handiest way to buy brass*

ALBANY† ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI† CLEVELAND DALLAS DENVER† DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY †Sales Office Only

CHANGE MAN-HANDLING TO MASS-HANDLING

Your quickest, surest step to lowered production costs and increased profits is to eliminate excess handling of your raw materials and products . . . to change man-handling to Mass-Handling with Towmotor Fork Lift Trucks and Tractors. Reduce costly man-hours spent transporting, lifting and stacking products within your plant. Write today for a copy of "Handling Materials Illustrated." Towmotor Corporation, Div. 11, 1226 E. 152nd St., Cleveland 10, Ohio, U.S.A.

*every handling job is easier with Towmotor MH**



TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS

**MH is Mass Handling*

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION



around the world, it's

HOOVER BALLS

made of

CHROME STEEL • CARBON STEEL • STAINLESS STEEL
BRASS • BRONZE AND MONEL METAL

"America's Foremost Ball Manufacturer"

HOOVER BALL and BEARING CO.
Ann Arbor, Michigan

(*Continued from page* 236)

summary of performance characteristics is included in the publication.

The standards are entitled "NEMA Standards for Varnished Tubing and Saturated Sleeving." Copies may be obtained from NEMA Headquarters, 155 E. 44th Street, New York 17, N. Y., at 50 cents each.

NEW STANDARD PROMOTES SHEET FELT

Tough, multi-purpose sheet felts have been made available for many new processing operations and manufactured products by the completion of a five-year standardization program just announced by The Felt Association, which includes the leading manufacturers of wool felt. The final step was the adoption of physical and chemical specifications after two years trial application by the industry on a tentative basis.

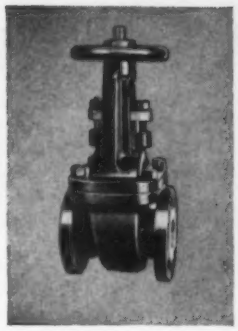
Standardization of wool felts for mechanical purposes, including the more widely known roll felts as well as the heavier and very dense varieties of sheet felt, has the same far-reaching effect as the standardization of metals and other structural materials. It stimulates improved quality control, facilitates procurement in times of national emergency and performs a service to all manufacturing industries by providing specification materials for better performance and longer life.

Sheet felts, as distinguished from mechanical roll felts, are fabricated in thirty-six inch squares and are available in greater density and thickness than roll felts. They are characterized by precision in manufacture, resulting in marked dimensional stability and improved physical properties which qualify them for a variety of technical applications.

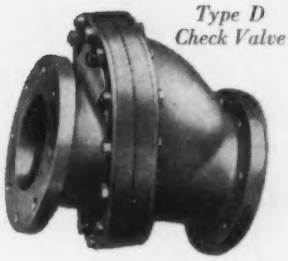
Sheet felts are made in four types, known as *Fine Spanish* and *Spanish*, for the finer types, and *Mexican* and *Coarse Mexican* for the coarser fiber constructions. Under the new standard nomenclature, these types are designated by numbers which also distinguish between the five degrees of density in which each type is made such as hard, medium and soft, as well as extra hard and extra soft. Standard weights range from thirty-two pounds for an extra hard sheet one inch thick down to twelve pounds for a one-inch thick extra soft sheet. Thicknesses range from one-quarter inch to three inches and for each density sheet weights are proportionate to thickness.

The sheets are milled to greater densities than roll felts.

Standards for mechanical roll felts were formulated 30 years ago, first adopted by the SAE in 1921, and have been revised and expanded by the Felt Association within the past few years. A third group of apparel and decorative felts is in process of standardization. All felt specifications are subject to test methods of the American Society for Testing Materials, designation D-461-49.



Wedge Type Gate Pattern



Type D Check Valve

Chem Rayon "Y" Pattern

Whenever you have problems of

ACID CONTROL

...make full use of NATIONAL Service

As these valves suggest, acid handling installations differ greatly in design and function. Because of this, it's often a real problem to choose the *right* type of control.

That's why it's good business...good engineering...to make full use of NATIONAL service when you have such problems.

What is this NATIONAL service?

It's service that brings you the widest sort of application know-how—know-how acquired by working with many different plants on many different processing problems...all over the country.

It's service that brings you the acid valve know-how of the leader in lead.

It's service that brings you "United" valves and "United Tubond" flanged pipe and fittings: built to render long, dependable service; designed to make the most of lead's inherent corrosion resistance. The lead used is "St. Joe Chemical."

It's service brought to you by an organization NATIONAL not only in name but also in scope—with strategically located plants and stocks that assure quick and economical handling of your valve, pipe, and fitting needs.

So...whatever your acid control problem, make full use of NATIONAL service.

Offices and Plants in Principal Cities; Pacific Coast: Morris P. Kirk & Son, Inc., Los Angeles; Canada: The Canada Metal Company, Ltd., Toronto.



Valves and fittings with a NATIONAL reputation

LEAD COMPANY

111 Broadway, New York 6, N.Y.

Want Additional Product Information? See Page 19.



IT'S the twist that does the trick . . . the twisted bar construction gives greater traction, makes slipping impossible even if the grating is wet, greasy, or covered with snow. The slightly roughened surface grips shoe soles for *extra* safety, yet the over-all surface is level for confident ease in walking and standing. Trucks and other wheeled vehicles roll freely.

In addition, Blaw-Knox Steel Grating is *electroforged* into one piece for extra strength and load bearing durability.

Look at these other advantages

Maximum open area for light and air • Self-cleaning—no sharp corners to clog • Easy to maintain and paint • Economical to install.

GET ALL THE FACTS FROM THIS NEW BULLETIN

Big new Bulletin gives complete construction details, specifications, numerous possible applications and all the outstanding advantages of Electroforged Steel Grating and Stair Treads. Write for Bulletin 2296 today!



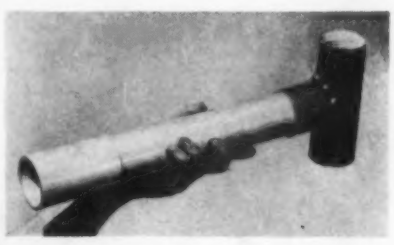
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of BLAW-KNOX Company
2075 Farmers Bank Bldg., Pittsburgh 22, Pa.

BLAW-KNOX ELECTROFORGED STEEL **GRATING**

GLASS-FIBER TUBE AND PIPE MATERIAL

Development of a new glass-fiber tube and pipe material, designed as a replacement for steel and other critical war metals in many commercial applications, has been announced by United States Plywood Corporation, 55 W. 44th St., New York.

Known as Glasweld, this new product, according to J. B. Williams, Jr., vice-president of the plywood company, has the strength of steel and is rust and corrosion proof. It is now available as piping in the oil and chemical processing industry and as tubing for the building, electrical and allied fields.



Glasweld is a laminated tubing in which glass fibers, in the form of cloth, mat or tape, are bonded with resins to develop a rugged tube impervious to extreme heat, chemical action and sledge-hammer blows. Much of the research for Glasweld was done for the U. S. Navy, and it is already used by the U S. Army as well as in commercial applications. Mr. Williams explained:

"Initial uses have been in the structural and electrical fields where it has found a ready acceptance for applications requiring a non-metallic product which possesses good electrical properties, is light in weight, and has a high strength factor. Glasweld has good resistance to many dilute and strong acids."

* * *

GENERAL SERVICE COPPER TUBE COMMERCIAL STANDARD

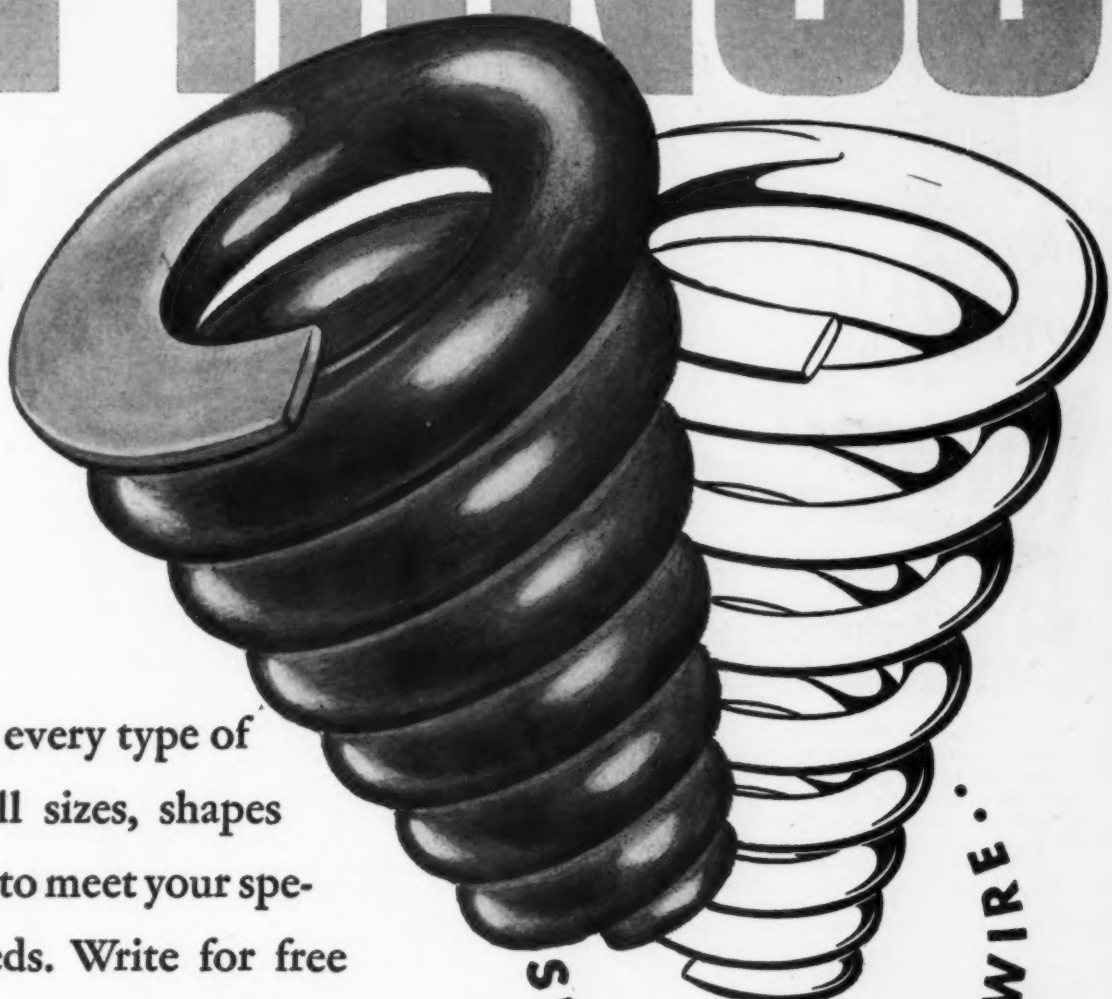
Commercial Standard 167-50, Automotive and General Copper Tube, has been released by the U. S. Department of Commerce, and copies are now available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. at 5¢ per copy.

The standard provides minimum requirements for eight standard sizes of seamless annealed copper tube manufactured in accordance with ASTM Specification B68, for automotive and general service purposes in sizes ranging from ⅛" to ¾" in outside diameter. It covers temper, manufacture, chemical composition, tensile properties, workmanship and finish, dimensions, weights, and tolerances. It also includes methods of test and packing, and a recommended statement for indicating compliance with the standard.

The term "automotive and general service copper tube" applies only to tube intended for use in the field for repairs and alterations.

(*Please turn to page* 242)

SPRINGS



We make every type of spring in all sizes, shapes and designs to meet your specialized needs. Write for free copy of our booklet S-500, entitled "Springs and Formed Wires."

SPRINGS BY WICKWIRE

WICKWIRE SPRINGS
AND FORMED WIRES

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Fuller Fiber Brooms Give You Three Times the Mileage

The true value of a broom is measured by much more than first cost alone. For example, a Fuller Fiber Broom outwears ordinary brooms 3 to 1. *You get three times the mileage.* We invite you to compare the wearing qualities of the Fuller Fiber Broom with any other broom under any sweeping conditions. We believe a test will convince you that, dollar for dollar, Fuller is your best buy. Prove it to yourself. Call your Fuller Industrial Representative today.



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SELF-ADJUSTING TOOL HOLDER

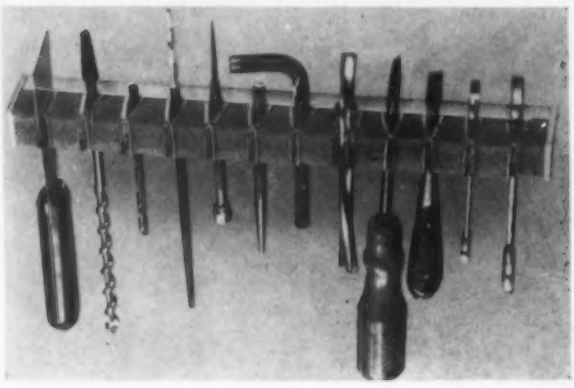


Illustration shows self-adjusting tool holder known as the Graspall, being marketed by the R K. Products Co., Dept. P7, 731 S. W. Front Ave., Portland, Oregon. The device consists of an aluminum channel base and aluminum shoes and sponge rubber cubes boxed between the shoes, providing constant grip on tools held between the shoe faces. The holders are 11¼" long, with 12 stalls for holding wrenches, drills, punches, knives, brushes, etc.

FOUR-WATT OZONE LAMP NEUTRALIZES OBJECTIONABLE ODORS

The fresh, clean smell which prevails out of doors during an electrical storm is being reproduced indoors on a small scale by means of a small lamp bulb being introduced here by General Electric's Lamp Department.

Ozone, a form of oxygen, is the substance created by nature which has the effect of neutralizing many objectionable odors, according to G-E engineers. Now it is produced at the flick of a switch by a new, four-watt lamp which is designed to dispel unwanted odors.

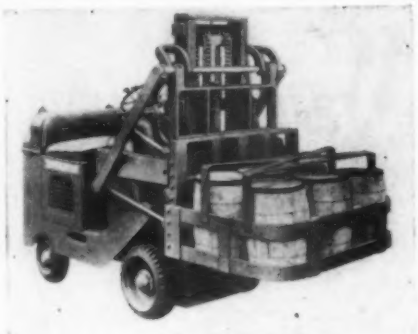
A glass ball less than an inch and a half in diameter, the new lamp bulb gives off the just barely noticeable concentrations of ozone which are useful in making the presence of odors less perceptible. It operates on household current, and is used with a ballast in a simple fixture which allows the free escape of ozone, but shields the eyes from the ultraviolet energy generated by the lamp.

Although they are expected to find public acceptance in homes, offices, and other living and working areas, the first ozone lamps to be produced are being acquired by manufacturers of automatic clothes dryers. They are being built into dryers to give clothes the odor as well as the appearance of cleanliness. The bulbs also are being built into refrigerators and beverage vending machines. In addition, the lamps are seen by engineers as having advantages in such other equipment as heating, ventilating, and packaged air conditioning units.

The ozone produced by one lamp bulb, according to G. E., is sufficient to mask odors in areas of up to 1000 cubic feet. The new lamp is expected to be used as a room deodorizer in public and private rest rooms; in commercial and industrial areas such as elevators, reception and conference rooms, and private and general offices; and in such vehicles as passenger cars, ambulances, air-conditioned planes, trains, and buses, as well as various domestic rooms.

The lamps have a mild germicidal effect, according to engineers.

HYDRAULIC KEG HANDLING DEVICE



Latest materials handling development of Towmotor Corporation, Cleveland, Ohio, picks up, transports, stacks and unloads—without a pallet—six 200-lb. kegs of spikes in a single maneuver. To pick up a load, a guide frame mounted on a Towmotor Unloader Accessory with 10" stroke is lowered over the kegs; as the Unloader is retracted the guide frame pulls the kegs against three rubber-covered shoes which project from the face of the carriage. The six kegs, held securely in position by the guide frame, are firmly pressed against the projecting shoes and can be picked up and transported rapidly and safely. The need for a flat carrying plate has been eliminated. Both shoes and guide frame are easily detachable, so that this Model LT-44 Towmotor Lift Truck can be used with standard forks.

(*Please turn to page* 244)

Here's why Millers Falls METAL-CUTTING BANDS give you HIGHER PERFORMANCE... LOWER CUTTING COSTS!

1 PART OF THE WORLD'S BROADEST AND MOST HIGHLY DEVELOPED LINE OF METAL-CUTTING SAWS. Millers Falls bands are teammates of such famous performers as "Tuf-Flex"®, "Blu-Flex"® and "Blu-Mol"® hand hack saw blades..."Blu-Mol"®, "Double-Life"®, "Jet-Edge"® and "High Speed" power blades..."Blu-Mol"® high-speed, follow-through type Hole Saws. They bring you the benefits of Millers Falls never-ending research for finer steels . . . better cutting designs . . . more effective heat treating methods.

2 A BLADE THAT'S RIGHT FOR EVERY JOB. Millers Falls bands are made to meet every cutting requirement. Hard-edge, flexible-back blades with correct pitch and set for all kinds of metals, wood and plastics—straight, contour and profile sawing. Spring-temper blades for high-speed sawing on soft and thin materials.

3 IN COILS OR PRE-WELDED TO FIT EVERY MAKE AND MODEL OF MACHINE. Your supply room problem is minimized when you use Millers Falls bands. Sizes for every type of band saw are supplied cut and pre-welded—ready to use. Or, if you have a variety of machines, blades can be stocked in coils of 100 ft. and up.

4 INDIVIDUALLY BOXED FOR PROTECTION AND EASY HANDLING. Each Millers Falls coil and pre-cut blade comes to you packed in a separate carton, fully protected against kinking and rust. Clearly marked for quick, accurate identification — they are easy to store, easy to handle.

Add to that the outstanding performance records of Millers Falls bands in plant after plant, and you have the big reasons why they are gaining enthusiastic new users all the time. Try them in your shop. We'll be glad to arrange a demonstration on request.

MILLERS FALLS TOOLS

SINCE 1868

MILLERS FALLS COMPANY GREENFIELD, MASS.



23A Series—Double Ball Race Swivel Caster



3A Series—Single Ball Race Swivel Caster



1A Series—Stationary Caster



14A Series—Tongue Swivel Caster



Spring Action Swivel Caster

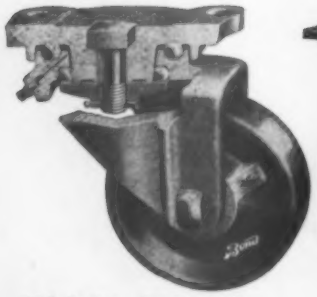
Uneven Floors . . . Narrow Aisles . . . Sharp Turns . . . Heavy Loads . . . Long Hauls . . . Rough Handling . . . there's a

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BOND FOUNDRY & MACHINE CO.
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36A Series—Double Ball Race Swivel Caster



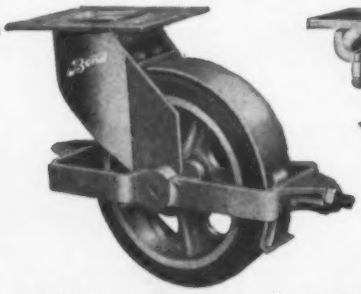
41A Series—Structural Steel Stationary Caster



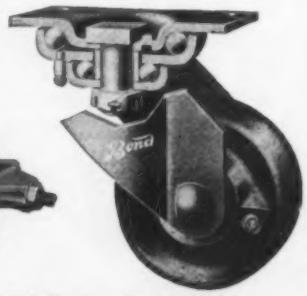
Dual Wheel Swivel Caster



40-AH-VG—V-Grooved Wheel Swivel Caster



1640A—Structural Steel Caster with Wheel Brake



40A Series—Double Ball Race Structural Steel Swivel Caster

NEW SAE MANUAL TELLS HOW TO DESIGN CONED DISK SPRINGS

Three ways to design coned disk or Belleville springs and two ways to make them are detailed in the recently-published SAE Manual, Design and Manufacture of Coned Disk Springs. Prepared by the Society of Automotive Engineers Spring Committee, the new manual is the sixth in an SAE series on springs. (The other four cover helical and spiral, leaf, volute, torsion bar springs, and spring problems.)

Belleville springs are used in gun recoil mechanisms; as spring washers to give constant bolt loading or gasket pressure; in tailstock centers to take up expansion of work at constant thrust; and in clutches to apply load to friction plates.

Their load-deflection characteristics can be varied, the manual points out, by changing the ratio between initial cone height, h, and thickness, t.

Belleville springs may be used singly, or stacked in parallel or series. Stacking in parallel increases load capacity in proportion to the number of springs. Friction between the springs also provides damping. Stacking in series raises the deflection for a given load in proportion to the number of disks. Spacers between springs stacked in series make possible deflections greater than total cone height.

The design section of the manual shows three ways to calculate coned-disk spring stresses and deflections.

It also notes that springs generally are made of carbon or alloy steel. For special purposes, stainless alloys and nonferrous materials are used. Belleville springs come in two quality grades — commercial and special grade. The special grade is more precisely made and costs more.

Allowable height variations and manufacturing tolerances also are tabulated in the manual. Copies are available from SAE Special Publications Department. Prices: $1.75 each to SAE members, $3.50 to non-members.

NEW LAMINATED PANEL FOR CURTAIN WALLS OR PARTITIONS

Kaylo laminated panels, a "sandwich" product two inches thick with faces of cement-asbestos board and an inorganic core of Kaylo insulation, are announced by the Kaylo Division of Owens-Illinois Glass Co., Toledo 1, Ohio. The new panels are designed to provide efficient, permanent curtain walls or interior partitions. They are also available with wood veneer and metal facings. The Kaylo material provides a core which is incombustible, lightweight and strong, and offers insulating value as well as exceptional dimensional stability. The panels, nominally two inches thick, have better insulating value than 16 inches of concrete. Each standard 4′ x 8′ Kaylo laminated panel weighs about 200 lbs. Bulletin, A1A File 17-A gives complete details.

(*Please turn to page* 246)

P&H helps you



cut fabricating costs on "hard-to-weld" steels •



Have superior physical qualities — ideal for welding heavy sections that must withstand severe shock and abuse.



Low-Hydrogen Electrodes

- ***For problem steels:*** High carbon, high sulphur, cold-rolled, alloy... *70LA.*
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- ***For chrome-moly steels*** (1% Cr., ½% Mo.) used in power piping ... *80LE.*
- ***For chrome-moly steels*** (2% Cr., 1% Mo.) used in power piping ... *90LE.*
- ***To match heat-treating properties of SAE 1040*** and like steels. Also for steel-castings repair... *P&H40C.*
- ***For welding high hardenable steels.*** Also steel castings repair... *AW2B.*
- ***For repair welding Grade C castings*** and steels of similar composition... *P&H#7.*
- ***Comparable to SAE 8630 steel...*** excellent heat-treating and flame-hardening characteristics... *90LH#2.*
- ***For welding high hardenable steels*** without preheat such as re-rolled rail stock... *P&H#12.*
- ***For aircraft and similar steels . . .*** has wide range of properties under heat treatments... *P&H#21.*



Withstand high amperages and have high deposition rate. Operators burn more rod per hour, weld faster at lower costs.



These rods operate with stable arc on AC or reverse-polarity DC. Other money-saving features are: Elimination of underbead cracking. Low hydrogen content for successful enameling. Little or no preheating. Minimum spatter. Excellent appearance of weld... freedom from surface holes. Order from your P&H representative or local P&H distributor. Send coupon for detailed information.

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Company..... Title.....

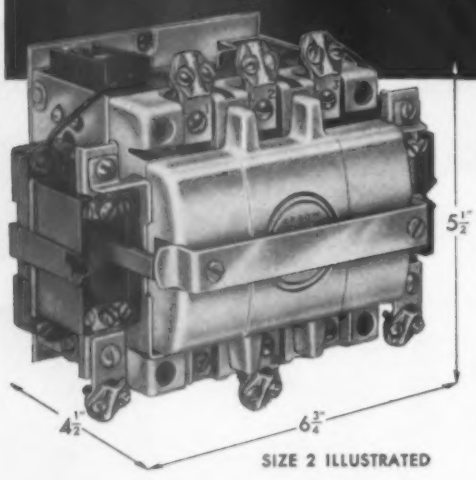
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City..... (.....) State.....

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MAGNETIC STARTERS

Preferred by ENGINEERS and PRODUCTION MEN



SIZE 2 ILLUSTRATED

Because

- MOST ADVANCED DESIGN
- TESTED AND APPROVED
- JUST HALF THE SIZE
- REDUCED WEIGHT
- EASY TO WIRE AND SERVICE
- ALL TYPES OF HOUSINGS
- AVAILABLE IN SIZES 0, 1, 2, 3 and 4



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ARROW·HART

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LARCH DISTINCTIVE AMONG ASSOCIATED SPECIES FOR STRENGTH AND BEAUTY

Larch, companion piece to Douglas Fir as a Western Pine region structural wood, is a unique forest species.

It is a conifer, like other softwoods of commercial importance, but it's not an evergreen. Each fall, its short, flexible, brilliant green needles turn a bright yellow, then drop to the ground just as do the colorful leaves of hardwood trees. Through the winter, it is frequently taken by visitors for dead, but in the spring the Larch tree again bursts forth in its bright green dress—one of the most spectacular of all the conifers. And the vivid yellow-red-brown color of the bark heightens the appearance. The trees are large, frequently growing to heights of 200 feet and diameters of five feet.

Average annual production is more than 200 million board feet and standing sawtimber inventory is estimated at 26 billion board feet. Many mills of limited Larch and Douglas Fir production combine the two into a common product known as Fir and Larch.

Like the tree, the wood is distinctive in appearance, too. Heartwood is dark russet or reddish brown. Sapwood, generally not more than three-quarters of an inch thick and largely slabbed off in sawing is straw-colored.

The wood has an extremely fine and uniform grain, averaging 21 to 27 rings per inch. It is rough-fibered and fine textured, working well and machining to exceptional smoothness. Flat grained stock presents a beautifully figured face. Heavier than most softwoods, it weighs 36 pounds per cubic foot at 12 per cent moisture content. Specific gravity is .48.

As a heavy wood, Larch will shrink and swell more than most lighter softwoods but in the same general range with other structural species. Dried from a green state to 12-15 per cent moisture content, it has a volumetric shrinkage of 6.6 per cent.

Larch has exceptional nail holding power. Safe withdrawal resistance of perpendicularly driven eight-penny nails in seasoned stock is 27 pounds per lineal inch. Blunt-pointed nails are recommended to overcome a slight tendency toward splitting.

For painted surfaces, a good prime coat such as aluminum paint or white lead in oil is recommended. When Larch is used in contact with the soil, preservatives should be used.

The properties of Larch fit it ideally to structural uses in the construction field. From residential framing to bridging, railroad ties and mine timbers, it has a long record of proven performance. In vertical grain stock, Larch is extremely resistant to abrasion, scuffing and denting.

Larch also finds many finish purposes. It is used extensively as knotty or clear-vertical-grain paneling and woodwork. It is fabricated into lawn furniture, built-ins, swings, ironing boards, window sash and frames and a multitude of other articles by woodwork concerns.

Want Additional Product Information? See Page 19.





ALBERT DWIGHT WILSON

(*Ninth President of* BRISTOL BRASS)

Master detective of needless waste . . . Stabilizer of Brass mill costs and procedures . . . "The Man to Ask" about any phase of mill finance . . . Commander-in-chief when Bristol enlisted for its 5th war

WHEN Albert Wilson came to the presidency in 1935, it was the only position in the organization that he had not held at some time, since 1902. That year of 1935, strange noises were coming out of Germany. F D R had just won again, and business was up at the time, only to dive sharply again in '38.

But as usual, the Bristol mills continued on the even tenor of their way. And one of the chief reasons was that "Bert" Wilson had spent the previous 33 years as a tireless enemy of waste. For instance, in World War I, when the mills had to account for government materials used, all they had to figure on was a pile of ashes and mud. So Albert Wilson worked out a method of determining the exact proportions and costs of the spelter, copper and scrap that went into an 80-lb. bar of Brass. Then, following the tonnage produced, he booted waste clean out of the casting shop. Such control systems proved increasingly valuable through World War II, and right up to the present.

Today, as board chairman, in his 48th year with Bristol, the Wilson eye for economy is keen as ever!

Such endless energy, expended in behalf of stockholders and customers, is a hundred-year tradition at Bristol Brass . . . an asset to you as well as to ourselves. For it means that Bristol always delivers full measure of value with no waste of time, motion or materials.

Yes, "Bristol Fashion" means "*businesslike* fashion" . . . and that's the way *your business* will be handled, here.

One Hundred Years of BRASS made "BRISTOL FASHION"

Like the world-famed merchant ships from Bristol, England . . . Always prompt, shipshape, reliable

The BRISTOL BRASS CORPORATION, *makers of Brass in Bristol, Conn. since 1850*

Want Additional Product Information? See Page 19.

PERSONALITIES *in the* NEWS

Phillips B. Hoyt was recently elected Vice President in Charge of Purchases of American Car and Foundry Company, New York, N. Y. The action was taken



Phillips B. Hoyt

by the board of directors following the annual meeting of the company's stockholders. Mr. Hoyt was formerly Director of Purchases.

Thomas D. Jolly, Vice President, Aluminum Company of America, Pittsburgh, Pa., discussed the joint functions and responsibilities of a company's engineering and purchasing departments at the annual convention of the Association of Iron and Steel Engineers, held on September 26-29 in Cleveland, O.

James G. Pepper was recently elected Purchasing Agent of Sanson & Rowland, Inc., Philadelphia, Pa., by the board of directors.

Paul Meeske and **S. E. Quinn** have been promoted to new positions in the purchasing department of The Dow Chemical Company, Midland, Mich. The promotions were announced by M. E. LeFevre, Director of Purchases. Mr. Meeske becomes Assistant Director of Purchases, and Mr. Quinn, Purchasing Agent for the Midland plant.

Mr. Meeske joined the Dow sales department in 1940, and transferred to purchasing in 1947. During those years he served in sales, production engineering, accounting and in plant engineering at Dow plants in Gary, Ind., and at Ludington, Marysville and Midland, Mich. He received a B.S. degree in chemistry from the University of Michigan in 1938 and his master's degree in business administration at the same university in 1940.

Mr. Quinn joined the company in 1929, and entered the purchasing department in 1934. He became an assistant purchasing Agent of the Midland plant in 1941 and General Assistant Purchasing Agent there in 1948.

B. L. Bethel, for 25 years a purchasing executive in the electronics and related industries, has been named Vice President in Charge of Purchasing for John Meck Industries, Plymouth, Ind. Most recently with Zenith Radio Corporation, Mr. Bethel had previously been with



B. L. Bethel

Eversharp, Inc., Bendix Aviation, The Muter Co. and Stewart-Warner. In 1945-46 he was Director of Purchasing for the Meck firm.

Don E. Sprott, Jr., has been promoted to Purchasing Agent of the Auburn Rubber Corporation, Auburn, Ind., succeeding Fred Quance, who recently resigned.

Joseph H. Russell, Vice President of Gulf Oil Corp., Pittsburgh, Pa., has been named to head crude oil purchasing and pipe line transportation activities of the firm. These activities were recently established as separate and primary departments of the company.

Warren Frebel has joined Majestic Radio & Television, Inc., Brooklyn, N. Y., as Purchasing Agent. Mr. Frebel was formerly Purchasing Director for five years



Warren Frebel

at Meck Industries Inc., Plymouth, Ind.

Mr. Frebel served in the U. S. Signal Corps for four years during World War II. Prior to that he was associated with Wilson & Company. He attended the University of Illinois.

Robert H. Wiegand, Jr., has been appointed Purchasing Agent for Swift Manufacturing Company, Detroit, Mich., at the Hazel Park, Mich. plant.

Allen M. Adams has joined the Bell & Howell Company, Chicago, Ill., as Director of Purchases. Since 1946 Mr. Adams had been in charge of purchasing at Crosley Motors, Inc., Cincinnati, O. Prior to that time he was purchases and producion manager at Perfex Corporation, Milwaukee, Wis.

From 1942 to 1944 Mr. Adams was Director of Purchases and Sub-Contracting at the Massey Harris Company Tank Division in Racine, Wis., where he was in charge of purchasing, sub-contracting, expediting and traffic. He was educated at the University of Wisconsin, Baltimore College of Commerce, and Baltimore Polytechnic Institute. He replaces J. P. Smith, former Purchasing Agent, who has left Bell & Howell to go into business for himself.

(*Please turn to page* 250)



SUNICUT AVERTS MORALE PROBLEM

Improvement in Working Conditions Also Results in Big Dollar Savings

When a cutting oil "fogs" excessively, droplets form and drip from overhead onto the operators. It's a minor annoyance, but the kind of thing that can break down shop morale. So when it occurred three years ago in a large metalworking plant, the owner lost no time in taking action.

Accepting the advice of a Sun representative, he tried a "Job Proved" Sunicut oil. This ended the annoyance. It did far more besides. Being transparent, Sunicut made it easier for the operators to take micrometer readings on the work. It improved finishes remarkably and increased tool life 25%. Recently a switch was made to *new* Sunicut with Petrofac—and results have been even better.

Soon after adopting Sunicut, the shop began to add more machines, and faced the prospect of having to handle some 80,000 gallons of oil a year in drums. So again a call went out to the Sun representative. Working with the manufacturer's planning staff, he suggested bulk storage facilities, installation of a pump and individual feed lines to each machine, a larger chip wringer for more efficient oil recovery, and a filter for removing foreign matter after centrifuging. Consumption has turned out to be 63% less than expected. This, plus bulk-purchasing economies, has effected an overall saving of 70% in anticipated cutting oil costs.

Help on metalworking, lubrication, processing, or combustion problems is yours for the asking. Call or write the nearest Sun Office.

SUN OIL COMPANY • *Philadelphia 3, Pa.*

In Canada: Sun Oil Company, Ltd., Toronto and Montreal

SERVICE

A sales representative's job is to make sales. Although Sun industrial products salesmen do not overlook this important function, they give equal if not greater emphasis to the matter of rendering service. For the best of products, applied without thorough study of all aspects of the buyer's problems, will not create a satisfied customer. Thus it often happens that the recommendations of a Sun representative reflect themselves in matters as far afield from lubrication problems as, for example, employee morale. And because Sun field men have broad industrial experience in many different lines of manufacturing and processing, they are often able to bring a wealth of practical information to bear on a specific problem.

SUN PETROLEUM PRODUCTS

SUNOCO®

(*Continued from page* 248)

Fred Lachenauer has been appointed Purchasing Agent of American Lead Pencil Company, Hoboken, N. J. He was previ-



Fred Lachenauer

ously Assistant to the President and assisting in purchasing. Mr. Lachenauer started with the company in 1909, and was instrumental in the development and building of the company's saw mills in California. He succeeds Fred Costello, who has retired.

Bernard A. Behne has been named Purchasing Agent of the Cincinnati Street Railway Company, Cincinnati, O. He succeeds A. L. Fischer, retired.

Robert D. Gleadall has joined the Standard-Thomson Company, Dayton, O. as Purchasing Agent. He was formerly associated with the M. J. Gibbons Supply Company and the Dayton Pump Manufacturing Company.

J. L. Maloney has been named Acting Purchasing Agent of Northland Greyhound Lines, Minneapolis, Minn. Mr. Maloney, who has been with the bus company for 19 years, succeeds J. O. Mork, who resigned after serving in the post for 25 years.

Harold E. Karrer has been named Purchasing Agent of Transparent Package Co., Chicago, Ill. He succeeds Conrad L. Krueger who has been appointed Assistant to the President of the Company. Mr. Karrer was formerly with Product Manufacturing & Engineering Corporation.

George V. Sammet, Jr., Purchasing Agent of Northern Industrial Chemical Co., Boston, Mass., is the program committee chairman for the annual national conference of The Society of the Plastics Industry Inc., which will be held Oct. 18, 19 and 20 in Swampscott, Mass.

Howard D. Wemple, Purchasing Agent for the Platte Valley Public Power and Irrigation District, North Platte, Neb., has been named Purchasing Agent for both the District and the Nebraska Public Power System.

Louis P. Geise has been named Purchasing Agent of Capital University, Columbus, O., to succeed the late Stanton L. Bachman.

Joseph Van Nest has taken over the duties of Oscar L. Lear, Purchasing Agent for Mack Mfg. Co., Allentown, Pa. plant, who has retired after 41 years service with the truck and bus firm.

Herbert J. Rieth has been named Assistant Purchasing Agent of Purolator Products, Inc., Rahway, N. J.

Jack Sullivan has been named Purchasing Agent for the Houston Lumber Companies at Wichita, Kan.

A. J. Lange has been appointed Assistant Purchasing Agent of the Specialty Transformer and Ballast divisions of the General Electric Company, at Fort Wayne, Ind.

James A. Creswell has been appointed Purchasing Agent of Spruce Falls Power & Paper Company, Toronto, Ontario, Canada.

Robert E. Lane has been appointed district Purchasing Agent for Eastern Air Lines New York, N. Y., in the New York-Newark area.

S. R. Marshall has been appointed Director of Purchases of Hydraulic Equipment Company, Cleveland, O. Prior to joining



S. R. Marshall

the company, Mr. Marshall was associated with the Joy Manufacturing Company as Purchasing Agent, Cleveland Division, and with the Plymouth Division of Chrysler Corporation.

F. Albert Hayes, Vice President for Purchasing for Bigelow-Sanford Carpet Company, Inc., New York, N. Y., has sailed on an extended business trip to visit supply sources in Europe, India, Australia and New Zealand.

Harry L. Erlicher, Vice President in Charge of Purchasing and Traffic, General Electric Company, Schenectady, N. Y., completed fifty years of service with the company on September 31.

Mr. Erlicher, widely known in both purchasing and general business circles, started with G. E. as a boy. Beginning as a messenger, he later entered the purchasing department as an office boy, and within a few years was buying office supplies and bolts and nuts. He continued to advance through various positions of importance in the department, and was eventually named a vice-president of the company.

He has been active in association work, both national and local, and is a past president of the Purchasing Agents Association of Eastern New York.

O. D. Story, head of Shell Oil Company's Regional Purchasing-Stores Department since 1947 died recently in Los Angeles, Calif. Mr. Story had been connected with



O. D. Story

Shell for almost 28 years, and with the company's Houston, Tex., office since 1933. Since June for this year, he had been on special assignment for the company, first in New York and then in California.

Mr. Story had been very active in the work of purchasing groups throughout the country, and at various times served as president of the Houston Purchasing Agents Association, vice-president of the National Association of Purchasing Agents, and national chairman of the Oil Buyers' Group of N.A.P.A.

AMONG THE COMPANIES YOU BUY FROM

Boston, Mass.—Dravo Corporation. A sales office has been opened here at 79 Milk Street with R. M. Barnes, northeastern sales and service manager of the heating department, in charge.

Los Angeles, Calif.—Chase Brass & Copper Co. Raymond A. Sternthall has been appointed manager of the company's office and warehouse here, to succeed the late T. Franklin Day.

Louisville, Ky.—Reynolds Metals Company. The aluminum foil sales division is being moved here from Richmond, Va., as a step in the reorganization of the company's general sales division.

Brooklyn, N. Y.—O. Z. Electrical Manufacturing Co. George H. Kinzel has been appointed sales manager.

Racine, Wis.—Peerless Machine Company. Frank T. Wruk has been elected vice-president in charge of sales and service.

Louisville, Ky.—Reynolds Metals Company. John E. Blomquist has been appointed industry manager, industrial parts division, and will be concerned with the sales management of the company's fabricating plants.

(*Please turn to page* 252)

Creative Package Design



this corrugated "safety" box

Promotes careful handling... identifies contents... simplifies transportation, storage, installation... speeds up order filling. Strongly printed in vivid red and blue on buff-colored, linen-finish corrugated board, its message of caution is unmistakable—yet the design reflects product quality. For better package action—increased protection, improved appearance, more "sell" and lowered costs, consult Hinde & Dauch, Executive Offices, 5003 Decatur St., Sandusky, Ohio.

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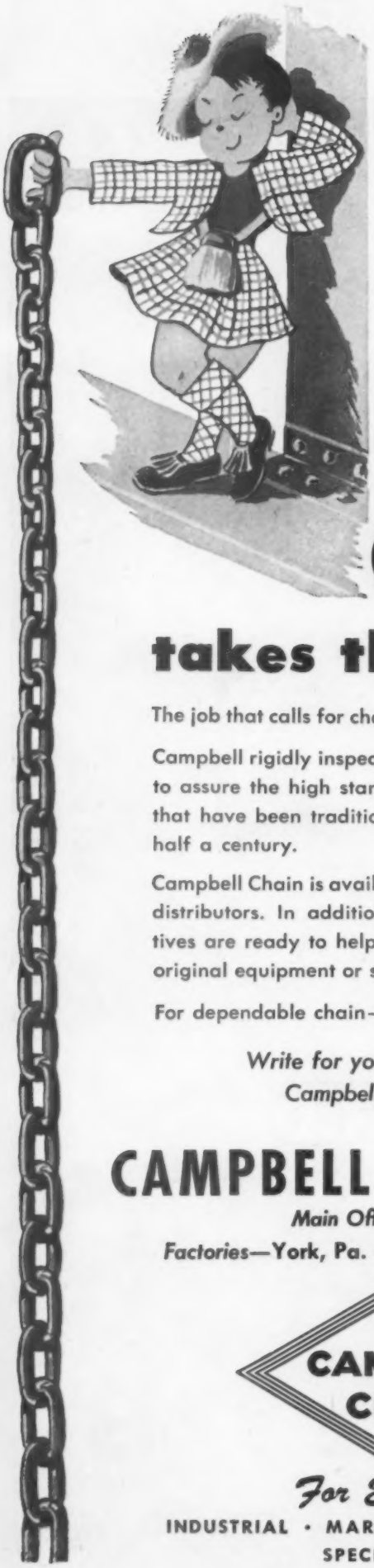
Authority on Packaging

Send for Booklet "Pack to Attract," a Valuable Portfolio of Successful Merchandising Ideas from The H & D Package Laboratory.



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Want Additional Product Information? See Page 19.



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CHAIN
takes the strain . . .

The job that calls for chain deserves only the best.

Campbell rigidly inspects every link in every chain . . . to assure the high standards of strength and quality that have been traditional with Campbell for almost half a century.

Campbell Chain is available through leading industrial distributors. In addition, Campbell field representatives are ready to help you and your engineers with original equipment or special chain requirements.

For dependable chain—depend on Campbell.

Write for your copy of the latest Campbell Chain Catalog.

CAMPBELL CHAIN *Company*
Main Office—York, Pa.
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CAMPBELL CHAIN

For Every Need:
INDUSTRIAL • MARINE • AUTOMOTIVE • FARM
SPECIAL PURPOSES

New York, N. Y.—The Fyr-Fyter Company. The following appointments have been made in the eastern division: P. R. Warren, eastern divisional manager; M. M. Stillman, New York City sales representative; F. K. Scovil, Long Island and New Jersey sales representative; R. A. Murphy, zone sales manager, Boston office; and L. C. Bailey, zone sales manager, Philadelphia. All were formerly with The General Detroit Corp.

San Francisco, Calif.—National Electric Products Corp. The company has created



R. Graham Holabird

within its sales organization a western region, with R. Graham Holabird as regional manager. The regional office is at 400 Potrero St. here.

Washington, Pa.—Jessop Steel Company. John R. Harbaugh, who has been doing special assignment work in metallurgical sales for the company for the past ten years, has been appointed assistant general manager of sales.

Houston, Tex.—Bridgeport Brass Company, E. D. (Pat) Casseday has been appointed Houston district sales man-



E. D. Casseday

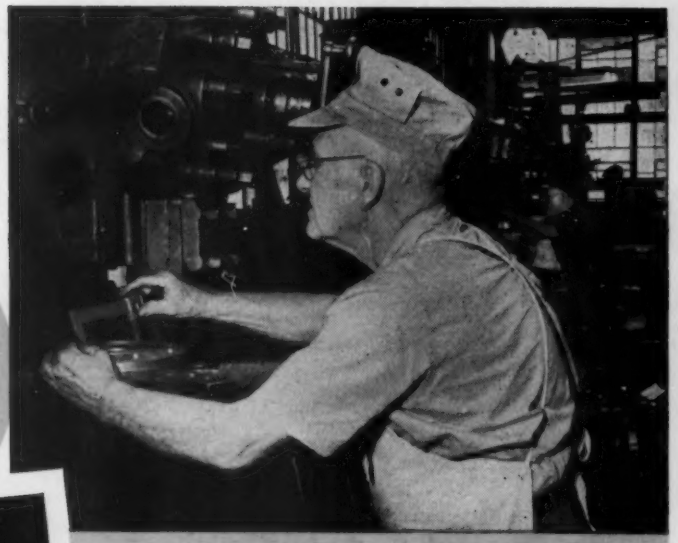
ager, to succeed George Chatneuff. In this position he will be responsible for the sale of all the company's products in southeastern Texas.

Chicago, Ill.—A. Leschen & Sons Rope Company. Russell J. Dickson has been appointed district manager for the Chicago territory, which serves Minnesota, Wisconsin, Michigan, northern parts of Illinois and Indiana, and eastern Iowa. He succeeds Mark Arnold, who retired after 47 years with the company.

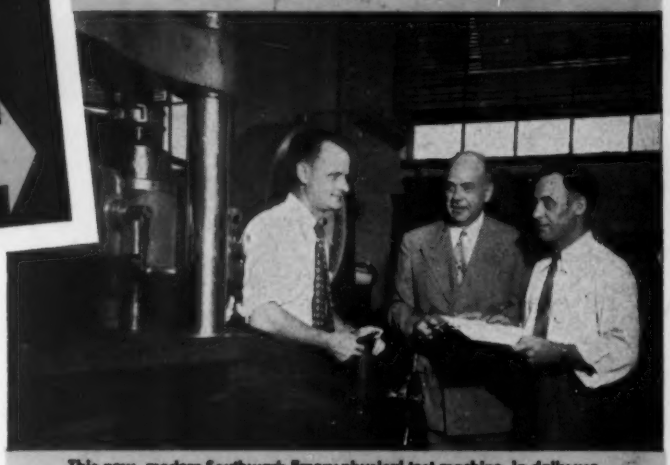
(*Please turn to page* 254)

THEIR JOB is to help you get..





Mr. Claude Waltz, operating a Bullard high-speed boring mill here, started at OIC in 1896, at age 19, as an apprentice machinist.



This new, modern Southwark-Emery physical test machine, in daily use, is one of the many mechanical aids added to the 40 years of precision engineering experience of Messrs. Malaney, Doster and Turner.



Mr. A. A. Kruse, factory trained in precision application of valves, is one of many O. I. C. representatives in various parts of the nation qualified and available to aid both distributors and users in valve application.

Precision Engineering of valve designs, Precision Manufacturing and Precision Application—OIC considers all three factors equally essential to good valving. OIC has the years of experience and the service organization to give you all three.

We point with pride to these veteran members of the OIC organization as evidence: Mr. Claude Waltz has been contributing precision machining for 54 years. Mr. D. B. Malaney, Metallurgist, Mr. H. G. Doster, Vice President in Charge of Engineering, and Mr. J. B. Turner, Product Engineer, combine 40 years of service in precision engineering. Mr. A. A. Kruse, Jr., who began in our Engineering Department, is now one of the many field engineers advising users on precision valve application in various parts of this country.

If you're needing valve *application know-how,* call the nearby OIC distributor for the help of a factory representative, or write direct to us. The Ohio Injector Company, Wadsworth, Ohio.

OIC
FOUNDED 1883

VALVES

FORGED AND CAST STEEL · IRON · BRONZE





Billings Vitalloy* Forged Wrenches

are the aristocrats of the wrench industry! They climax nearly a century of wrench making. Every part of a Billings wrench is designed and produced to accomplish a purpose—accurately shaped openings, thinner pear shaped heads, highly polished, smooth rounded handles, size of openings clearly stamped, heavy chrome plate over copper and nickel finish—and they accomplish the purpose for which they are intended in the most efficient manner. Billings Vitalloy ® Forged Wrenches are lighter, stronger and last longer. Is it any wonder experienced mechanics always reach for a "Billings"?



SEE BILLINGS INDUSTRIAL DISTRIBUTORS

COMBINATION Box and Engineers' Heads. Dual purpose wrench for general industrial use.

45° ANGLE BOX in long and short patterns for automotive and machine assembly.

15° and 75° ANGLE ELECTRICAL for carburetor, magneto, radio and electronic work. Thin design fits into close corners.

*Special analysis alloy steel heat treated to Billings rigid specifications.

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WRENCHES & SHOP TOOLS

FROM BILLINGS INDUSTRIAL SUPPLY DISTRIBUTORS

THE BILLINGS & SPENCER COMPANY, HARTFORD 1, CONN., U.S.A.

Detroit, Mich.—Carboloy Company. The following appointments have been announced; J. E. Weldy, marketing manager; J. S. Gillespie, product sales manager; J. M. Bertotti, field sales manager.

Cleveland, O.—Superior Electric Company. An office has been opened here in the Fidelity Building, 1940 East 6th St., to serve the Ohio and western Pennsylvania areas. It will be headed by Harold W. Lorenson.

Cedar Rapids, Iowa.—Berger Manufacturing Division, Republic Steel Corporation. Robert H. Wallace has been named district sales manager with headquarters here.

Matawan, N. J.—Hanson-Van Winkle-Munning Company. Robert M. Norton, until recently assistant sales manager,



Robert M. Norton

has been promoted to sales manager. He had been assistant sales manager since 1948 after eight years as field representative in New England and New York.

Cleveland, O.—The Clark Controller Company. The following promotions have been announced: Robert H. Whitehill has been named manager of the Cleveland district sales office; H. B. Stallings is the new manager of the Pittsburgh district; Harry M. Cook is district manager of the Buffalo area; William R. Heckman moves from Syracuse to manager of the Akron office; John D Puette is district engineer in the Cleveland sales office.

New York, N. Y.—The Trailmobile Company. Harry A. Lageman, formerly manager of distributor sales, has been named eastern district sales manager. Joseph B. Kleckner has been appointed manager of the company's factory branch in Long Island City, N. Y.

Rossmoyne, O.—Steelcraft Manufacturing Company. Alan R. Mendenhall has been appointed sales manager of the steel building division of the company. Nat L. Lehman will continue as sales manager of the building products division.

New York, N. Y.—Charles Hardy, Inc., 420 Lexington Avenue, has been appointed sales representative to handle the line of ferrous alloy steel powders produced by Vanadium-Alloys Steel Company of Latrobe, Pa.

(*Please turn to page* 256)

MORE AND MORE PROPERTIES

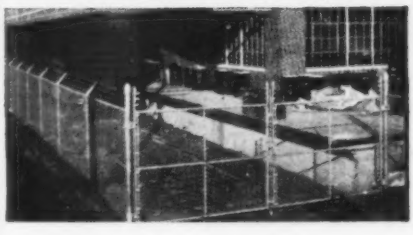
Protected Against Time

CARRY THIS SIGN. . . .

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MADE OF *KONIK STEEL





Knowing the steel is the best way to determine how long your fence will give "care-free" protection service. Continental Chain Link fence is made of KONIK—an open hearth alloy steel containing copper, nickel and chromium. It's tough . . . unyielding . . . extremely resistant to rust and corrosion. For property protection that lasts and lasts, more and more industries, institutions and residences the country over are turning to Continental Chain Link. If you'd like to know more about this better, stronger fence made of KONIK steel, write to Continental at Kokomo, or call our nearest fence representative.

*Due to present national defense requirements, KONIK will not contain standard amounts of nickel and chromium, two of the most critical war materials.

PLANNED AND ERECTED TO FIT YOUR PROPERTY

Continental fence engineers stand ready to plan and help erect the type of fence that will serve you best. Continental Chain Link fence gives you 14 distinctive construction advantages including stronger gates...pivot-type hinges... self-locking barb arms...20% more ties...full gage wire fabric of KONIK steel.

WE'LL SEND YOU THIS FREE FENCING MANUAL

A card will bring your copy of "Planned Protection"—a modern manual on protection and control of property, complete with 100 charts, drawings and photos. Write to Continental Steel Corporation, Kokomo, Indiana, or nearest sales office.



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CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF *Manufacturer's Wire* in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

BROWN PACKETS the Most Packaging for the least money



Brown Bag Packets reflect every quality of your full sized packages, yet keep packeting costs right down to a minimum. They fit naturally into the production picture of your dry, free flowing product, whether in the form of powders, granules or crystals. Expertly printed, precision cut and sealed with uniform open ends, they facilitate accurate and economical filling.

Serving as 50 year old packeting specialists to food, drug, cosmetic, soap, and sanitary chemical leaders such as: Nestle's, General Foods, Borden's — United Drug Company, Tussy, Sutton — Wrisley, Cuticura, Colgate-Palmolive-Peet and American Chemical Paint.

Look to Brown Bag also for your coin or payroll envelopes imprinted with your advertising or good will message.

Do you know about Brown Bag Heat Sealed Packets and Heat Sealing units for Brown Bag Filling Machines?

Do Your Sales Up "Brown"

Get a Brown Packet Quotation Today

Send for complete descriptive literature on Brown Bag Packet Filling Machinery.

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Fitchburg, Mass.
Manufacturers of Open End Envelopes, Packets and Packaging Machinery
WEST COAST REPS., Peter D. Bowley & Assoc., 210 Mississippi St., San Francisco, Cal.

Pittsburgh, Pa.—Westinghouse Electric Corporation. E. C. Hanks has been named sales manager for the company's gearing division.

New York, N. Y.—United States Rubber Company. Thomas H. Fitzgerald has been appointed sales manager of reclaimed rubber for the company's Naugatuck chemical division.

Los Angeles, Calif.—Sterling Electric Motors, Inc. Alan J. Bronold has joined the company as sales manager. He was formerly assistant general sales manager



Alan J. Bronold

in charge of national sales for the Sturtevant Division of Westinghouse Electric Corporation. Mr. Bronold takes over the duties of Allen Adams who has stepped down from active sales management, but who will continue as an officer of the company.

Fort Worth, Tex.—Scintilla Division, Bendix Aviation Corporation. A new sales territory has been created, covering Texas, Oklahoma and Kansas. M. E. Douglass, sales engineer, will be in charge.

San Francisco, Calif.—Raybestos-Manhattan, Inc. The California division of National Supply Company has been appointed distributor of Raybestos-Manhattan rubber and asbestos products for the California oil fields.

New York, N. Y.—The Cleveland Chain & Mfg. Co. A. P. Henricks Co., 78 Reade St., has been named direct factory sales representative here. The territory will consist of New York state, including metropolitan New York, and all of New Jersey north of Trenton.

Wapakoneta, O.—The Lithox Corporation. D. W. Moor, Jr., has been appointed vice-president in charge of sales.

Philadelphia, Pa. — Pennsylvania Salt Manufacturing Company. George D. Grogan and Donald Macfarlan, Jr., have been appointed district sales managers in Chicago and Detroit, respectively, for the heavy chemicals department of the company.

Los Angeles, Calif.—Round California Chain Co. Leonard D. Woods has been appointed assistant sales manager.

South Gate, Calif.—Hagan Corporation. A new Los Angeles district office has been established here at 3931 North Tweedy Boulevard.

Port Arthur, Tex.—Kaiser Aluminum & Chemical Sales, Inc. Standard Brass & Manufacturing Company has been appointed Kaiser aluminum distributor in the Texas Gulf Coast and Louisiana industrial area.

Philadelphia Pa.—Quaker Rubber Corporation, Division of H. K. Porter Company, Inc. Henry M. Sossaman has been appointed general sales manager.

Niagara Falls, N. Y.—The Carborundum Company. Sales assignments announced recently include the appointment of John A. Decker as sales manager for the New York district, and of William J. Kingsley as assistant sales manager of the bonded products and grain division.

Wichita, Kans.—O. A. Sutton Corporation. Don Schwartz has been appointed sales engineer in charge of the Sutco motor and coil division of the company.

Plainfield, N. J.—Walker-Turner Division, Kearney & Trecker Division. Lawrence H. Russell has been named to the post of sales manager of the division. Mr. Russell comes to Walker-Turner with ten years experience in the power tool field, and three years as sales manager of the Power King division of the Atlas Press Company.

Indianapolis, Ind.—E. C. Atkins and company. H. "Pete" Waddle has been ap-



H. Waddle

pointed as manager of mill supply sales for the company, with headquarters here. He was formerly manager of the New Orleans office, which has now been closed.

INDUSTRIAL DEVELOPMENTS

Acme Electric Corporation has begun construction on a new 25,000 sq. foot building at Allegany, N. Y., at an estimated cost of $100,000.

St. Regis Paper Company, New York, N. Y., has tripled its facilities for coating kraft paper with polyethylene to meet demand for specialty papers and multiwall paper shipping sacks containing this thermoplastic protective barrier ply.

(*Please turn to page* 258)

ARISTOLOY STEELS

HIT THE MARK



In electric furnace melting scrap is the basic metallic charge. Quality of steel is dependent upon this vital ingredient. Every car of scrap is thoroughly sampled—determinations are made for the various alloys, chemicals and impurities in question.

ARISTOLOY STEELS

STANDARD STRUCTURAL ALLOY
BEARING QUALITY • ALLOY TOOL
SPECIALTY • NITRALLOY
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Cleveland, Ohio

7251 General Motors Building
Detroit, Michigan

403 W. Eighth Street
Los Angeles 14, California

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Detroit, Michigan

3104 Smith Tower
Seattle, Washington

Monadnock Building
San Francisco 5, Calif.

SMALL PIPE *Threaded* IN A JIFFY



Quick, perfect threads on 1/8" to 2" pipe with RIDGID Nos. 00R, 111R, 12R

● You get ready in a hurry with these light, strong ratchet drop-head dies—just snap in the size die head you want and you're all set for threading. Die heads can't fall out—no special dies needed for close-to-wall work. Precision-cut tool steel dies for smooth perfect threads. Ask your Supply House for work-saver RIDGIDS No. 00R, 1/8" to 1"; No. 111R, 1/8" to 1¼"; No. 12R, 1/8" to 2."

RIDGID

WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO

Pittsburgh Steamship Company, Cleveland, O., United States Steel ore-carrying subsidiary, has awarded contracts for the building of three 647-foot boats, each with 18,000 gross tons cargo capacity. A few days before the award, Irving S. Olds, chairman of U. S. Steel, said the corporation would build the vessels in recognition of the national defense emergency and the need for augmenting iron ore and limestone carrying capacity on the Great Lakes.

W. B. Connor Engineering Corp., manufacturer of air recovery and purification equipment, and adjustable air diffusers, has moved its main offices, plant and laboratories from New York, N. Y. to Danbury, Conn.

Columbia Steel Company, San Francisco, Calif., will increase substantially the steel-finishing facilities of its Pittsburg, Calif., plant. Additional cold reduced sheet and tin plate facilities will be installed, with an annual capacity of approximately 215,000 net tons of sheet and tin plate. It is expected that the new mill can be put in operation by late summer of 1951.

Carter Products Corporation, Cleveland, O., has changed its name to Carlon Products Corporation.

Warren Steam Pump Company, Inc., Warren, Mass., has announced that negotiations have been concluded for the purchase of Quimby Pump Division of H. K. Porter Company, Inc., Pittsburgh, Pa. All manufacturing will be transferred to the Warren plant.

Vulcan Mold and Iron Company, Latrobe, Pa., will erect a new plant in the Chicago, Ill. district for the manufacture of all types of ingot molds. The new unit will be designed to produce approximately 50,000 tons a year, 50% beyond Vulcan's present capacity. The plant will cost approximately $1,000,000.

Atlas Screw and Specialty Company, metal fastenings manufacturer and distributor of Waterbury, Conn. will increase manufacturing facilities to permit the addition of several new items.

Continental Can Company's fibre drum plant at Tonawanda, N. Y. has resumed full production on a one-shift basis, after a suspension of activities since last fall.

Ardec, Incorporated, Philadelphia, Pa., is a new firm specializing in the production of precision parts and assemblies for the aircraft, automotive, diesel engine, instruments, electronic, small arms and allied industries. The company will also handle special engineering and research problems including production of prototype and testing units.

Michigan Tool Company has sold the Tungsten Carbide Tool Company to A. E. Tozer, general manager of the company since its founding.

(*Please turn to page* 260)



"Catsup ON YOUR ICE CREAM?"

Just because you used catsup on your steak, the waiter shouldn't assume you use it on the rest of your dinner too!

And just because one bearing is best lubricated by one particular grade of oil, you shouldn't assume that the same oil is best for *all* bearings on that machine. In many cases it isn't.

OIL CUPS permit you to lubricate each bearing with the oil best suited to that bearing—thus prolonging bearing life, reducing maintenance costs, cutting down-time, boosting production. And oil cups fortunately *cost very little.*

Gits oil cups have been the standard for industry for more than 40 years. Gits Bros. has the largest selection of oil cups available anywhere. Call on Gits Bros. for a prompt, efficient solution to your lubrication problems.

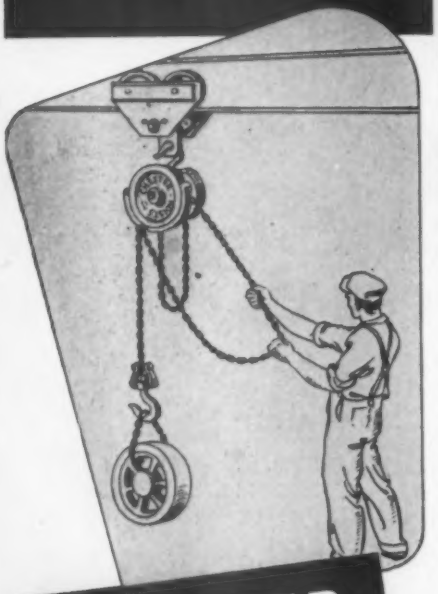
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SPEED • SAFETY • SAVINGS

IN LIFTING AND LOWERING



CHESTER HOISTS and TROLLEYS

Send today for new catalog giving complete information on capacities, prices, reach, chain pull, test load, etc.

Chester Hoists are available in standard and special Spur-geared types (¼ to 25-ton capacity) or Differential type (¼ to 1½-ton capacity). Complete line of trolleys, parts and accessories.



THE NATIONAL SCREW AND MFG. CO.
Chester Hoist Division
Lisbon, Ohio

P 5

Graybar Electric Company recently opened a new office, warehouse and display room in Houston, Tex., marking forty-two years of progress and expansion in that area. Houston is the newest Graybar district, having been set up last January as a district headquarters with responsibility for branches in Beaumont and Corpus Christi, Tex.; New Orleans, La., and Jackson, Miss.

Hartzell Industries, Inc., has broken ground for a $100,000 addition to its propeller fan plant in Piqua, O.

The Rinshed-Mason Company, Detroit, Mich., has purchased the former Caltone plant in Anaheim, Calif. It will be converted to the manufacture and warehousing of automotive and industrial finishes, automotive refinishing materials and allied products.

Norton Company has opened a new $150,000 warehouse and district office in Shaler Township, six miles from downtown Pittsburgh, Pa.

Adel Precision Products Company, Burbank, Calif., producer of hydraulic control equipment, has changed its corporate identity to Adel Division, General Metals Corporation. The change became effective upon the consolidation of Adel with Enterprise Engine and Foundry Company, and General Metals Corporation.

Houghton Laboratories, Inc., Olean, N. Y., manufacturer of protective coatings, has purchased a new plant at Smethport, Pa. The plant has 20,000 square feet of floor space and a 350,000 gallon liquid storage capacity.

Celanese Corporation of America has announced that the new $27,000,000 high alpha cellulose plant of Columbia Cellulose Company, Ltd. near Prince Rupert, British Columbia, is expected to come into production during the first quarter of 1951. Celanese is the parent organization.

Flexible Tubing Corporation, Branford, Conn., will move into its new 13,000 sq. ft. plant in Guilford, Conn. on November 15. The company manufactures Spiratube, a flexible and retractable ventilating and products-conveyor.

Coral Designs division, Henry G. Dietz Company, formerly of Forest Hills, N. Y., is now in expanded quarters in Long Island City, N. Y. The facilities are devoted to production of a standard line of electronic, electrical and mechanical controls.

H. C. Frick Coke Company, coal mining subsidiary of United States Steel, will open a new 4,000-ton-a-day coal mine in Washington County, Pa. and another mine of the same capacity, closed since 1928, in Fayette County, Pa. The moves are designed to help meet the continuing demand for additional coal required to make more steel for national defense purpose.

(*Please turn to page* 262)

INDIVIDUAL CUTTING OIL SANITATION

FOR YOUR PLANT!



Here's how to prevent costly coolant spoilage and eliminate foul odors: ask your DOLGE Service Man to take samples of your coolant for *free* bacteriological and chemical analysis. A complete laboratory report will show the correct coolant handling method for *your particular operation.*

Only if tests warrant it will a DOLGE STERIDOL GERMICIDE be recommended — a "tailor-made" preparation to meet *your exact needs.* Used as directed it will not irritate the skin or corrode metals. The cost? — Far less than a cent per galon of coolant!

●

Write for Booklet "Cutting Oil Sanitation".

STERIDOL

dependable

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WESTPORT, CONNECTICUT

Simply clean surface with **dy✓chek** Cleaner



STEP 1

Simply apply **dy✓chek** Dye Penetrant *(by brush, spray, or dip)*



STEP 2

Simplified Non-Destructive Testing

Simply remove excess dye with **dy✓chek** Cleaner



STEP 3

Simply apply **dy✓chek** Developer



STEP 4

RAPID ACCURATE INSPECTION

Any Metal—Anywhere

4 SIMPLE STEPS

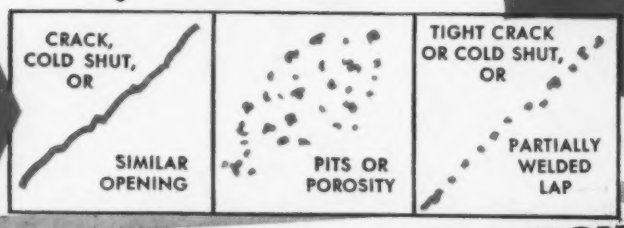
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dy✓chek TRADE-MARK

the dye penetrant inspection method

PATENT PENDING

AND... FLAWS ARE REVEALED



QUESTIONS AND ANSWERS

Q. What is Dy-Chek?

A. Dy-Chek is the revolutionary new dye penetrant method of inspection developed by *Northrop Aircraft Research.* It consists of three special liquid compounds easily applied by brush, spray, or dip.

Q. What does it do?

A. Dy-Chek reveals the location, extent, and nature of any flaw having a surface opening or discontinuity in any metal.

Q. Will Dy-Chek work on non-magnetic metals?

A. Yes, it works on *any* metal.

Q. Are special lights required?

A. No lights, booths, electricity, or special installations are necessary.

Q. What kind of metal surface can Dy-Chek inspect?

A. Any kind, including castings, forgings, machined parts, plate, sheet, tubing, pipe, and weldments.

Q. Must the surface to be inspected be specially prepared?

A. The surface need only be clean of dirt, grease, scale, etc. The surface need not be smooth.

Q. Can Dy-Chek be used in the field, for preventive maintenance, as well as in a plant for manufacturing and receiving inspection?

A. Yes, the complete portability of Dy-Chek is one of its great advantages.

LEARN HOW the Dy-Chek method of non-destructive testing can save you time and money in your business. Ask for complete details today.

dy✓chek COMPANY

division of Northrop Aircraft, Inc.

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1503 EAST BROADWAY HAWTHORNE, CALIFORNIA

dy✓chek —*the dye penetrant inspection method*

Dy-Chek Company

1503 East Broadway, Hawthorne, California

Send by return mail complete details on Dy-Chek, the Dye Penetrant Method of inspection for any metal.

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Belt Sanders
Bench Grinders
Chipping Hammers
Drills
Drill Stands
Grinders
Electric Hammers
Hoists
Impact Wrenches
Nibbler
Nut Setters
Paving Breakers
Polishers
Rammers
Rivet Hammers
Rock Drills
Sanders
Saws
Screw Drivers
Sump Pumps
Tappers
Valve Refacers
Valve Reseaters

IMPACT WRENCHES

DO EVERY NUT RUNNING JOB FASTER, EASIER

No matter which type of power you use—pneumatic, high frequency or universal electric—THOR can recommend the best Impact Wrench for the job. THOR builds all three types, and into 20 distinct models places the same exclusive type of impact mechanism that is outperforming other wrenches on scores of different jobs. Call your nearby THOR branch for a demonstration.

20 MODELS

INDEPENDENT PNEUMATIC TOOL CO.
AURORA, ILLINOIS

Free
CALCULATOR
Write today for this handy torque chart and tool selector for all nut running jobs.

Thor PORTABLE POWER TOOLS
ELECTRIC • PNEUMATIC

Gould-National Batteries, Inc., became the new name of the National Battery Company recently. The same sales and field engineering organizations which have been serving various industries under the name of Gould Storage Battery Corporation will now operate under the new name. Headquarters will remain in Trenton, N. J.

Clinton Machine Company has more than tripled its capacity for engine making with the purchase of a large new factory in Maquoketa, Iowa.

E. I. du Pont de Nemours & Company has taken an option on a tract of approximately 635 acres on the Neuse River between Kinston and Graingers, N. C., for the site of a new nylon yarn plant.

The Capewell Manufacturing Company, Hartford, Conn., has acquired V-Mac Industries, Inc., Guilford, Conn., manufacturer of pipe threading, cutting and reaming tools.

Pemco Corporation, Baltimore, Md., manufacturer of porcelain enamel finishes, colors, ceramic glazes, stains, glass colors, and ceramic chemicals is expanding its plant facilities by 30,000 sq. feet, at a cost of $250,000.

NEW 'STEEL CASTINGS HANDBOOK' BY STEEL FOUNDERS' SOCIETY

Recognized as the outstanding reference volume on steel castings and the steel casting industry since its initial publication in 1941, the *"Steel Castings Handbook"* has been entirely revised, expanded and brought-up-to-the-minute in the 1950 edition just published under auspices of Steel Founders' Society of America.

Rewritten, enlarged, and reorganized throughout, the new edition represents a complete revision of the original volume, which was last reprinted for the third time in 1945. It is considered outstanding in the completeness of its information on types of steel castings, specifications, design considerations, applications, mechanical and physical properties of cast steel, and other comprehensive technical data covering virtually every facet of the industry, its products, processes, history and outlook.

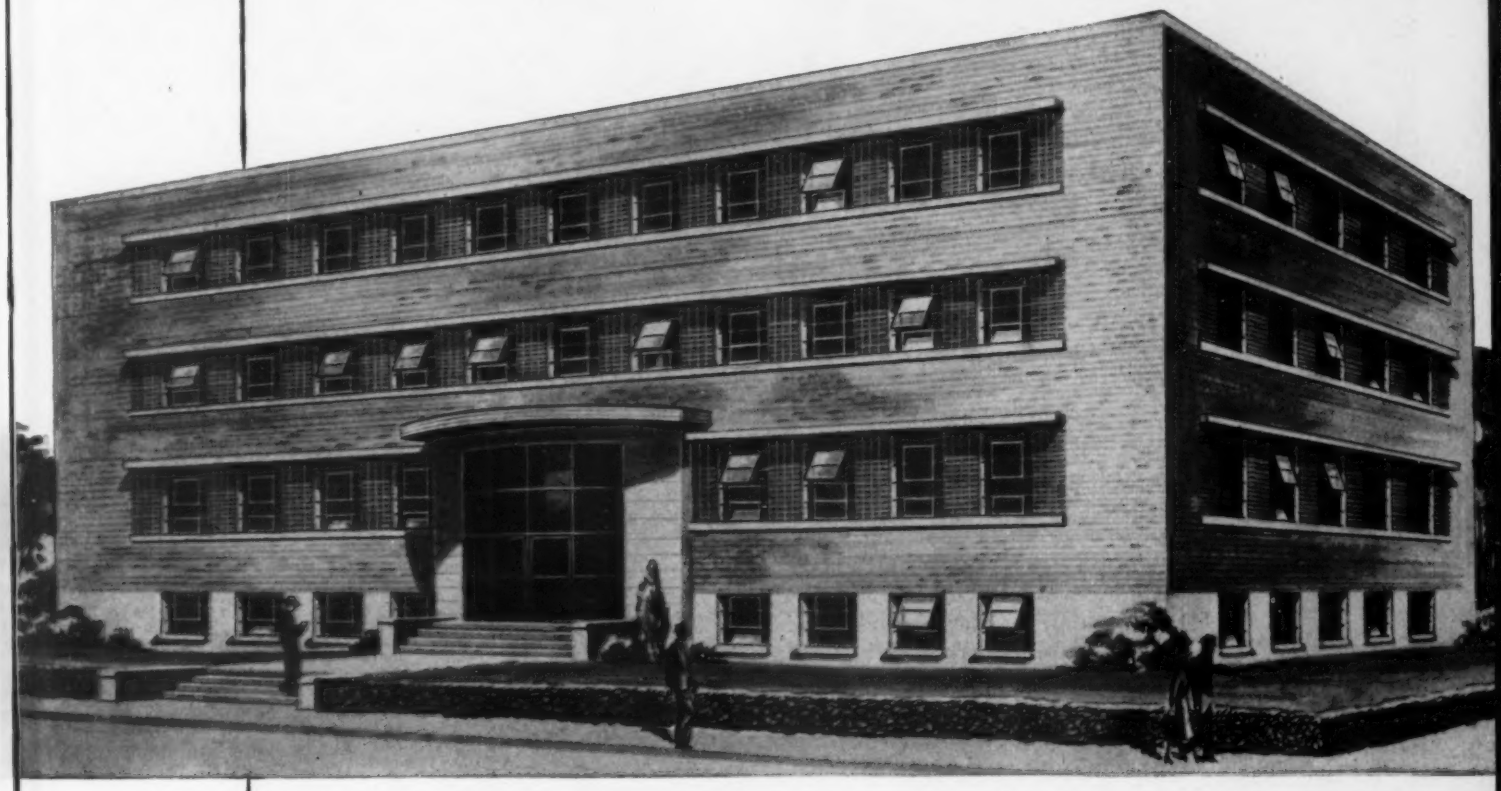
The new volume contains 520 pages of textual material. It is copiously illustrated, carrying 440 photographs and sketches pertinent to text; and includes 120 tables incorporating essential data unavailable in any other single volume.

Of particular usefulness is a five page section listing recommendations to purchasers of steel castings, and separate chapters devoted to steel casting specifications, and common definitions of frequently used foundry terms.

A limited number of copies of the 1950 *"Steel Castings Handbook"* has been printed. The price is $4.00. Copies may be obtained by writing to F. Kermit Donaldson, Executive Vice President, Steel Founders' Society of America, 920 Midland Bldg., Cleveland 15, Ohio.

(*Please turn to page* 264)

dedicated to continual advancement in the protection of life, health and property *throughout industry*



The John T. Ryan Memorial Laboratory

We take pride in the establishment of the world's largest and most completely-equipped laboratory devoted solely to better industrial safety. This new facility reaffirms a primary objective of the founders of our company: to maintain an ever-expanding program of *original* research and development, keeping pace with the new and different hazards produced by industry's steady technological progress. The work of the John T. Ryan Memorial Laboratory assures through science that every one of the many M.S.A. safety products will deliver maximum values in protection, ease of use, and satisfaction in service.

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MINE SAFETY APPLIANCES COMPANY

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At Your Service: 54 BRANCH OFFICES IN THE UNITED STATES AND CANADA



ELCO FINAL INSPECTION ASSURES DELIVERED QUALITY IN "THE SCREWS YOU LIKE TO USE"

It's aggravating, when you are using screws on the assembly line, to come across a bad one — a screw with the slot missing, bum threads or no threads at all, dubbed-off point, or a mongrel from another batch. More important, all the *good* screws should *all* be good — absolutely uniform on size, slot, finish, smoothness of threads, and point. That is the real reason why, at Elco, a group of experienced and eagle-eyed women look constantly and critically at Elco screws between the shop and the shipping department. It's a cinch for them to catch the bad ones, but it takes alertness and attention to make sure the rest are up to Elco standards. Their skill insures delivery of the uniform quality you expect in *good* screws — Elco Screws.

HAWKEYES AT WORK

One group of Elco final inspectors, working at tables specially equipped and lighted for fast and accurate work. Elco standards of inspection are as high as Elco standards of manufacture.



ELCO TOOL & SCREW CORPORATION
1912 BROADWAY · ROCKFORD, ILLINOIS

ELCO PRODUCTS



















AND Special Parts

NEOPRENE COVERED ALUMINUM ELECTRICAL CONDUCTOR

Availability of neoprene-covered weather-resistant aluminum electrical conductor is announced by Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.

Used by many public utilities in distribution systems, neoprene-covered aluminum wire is recognized for its excellent performance under severe climatic conditions and the economies derived from light weight, abrasion resistance, free-stripping and superior aging.

Neoprene covering is being offered in solid and stranded aluminum conductor and ACSR (aluminum cable, steel-reinforced) produced by the Kaiser Aluminum & Chemical Corporation at its Newark, Ohio, plant.

ANNOUNCE THREE DIMENSIONAL DOCK BOARD



Accompanying illustration shows new three dimensional dock board with vertical, horizontal, and lateral movement, announced by Beacon Experimental & Engineering Co., 714 No. 13th St., St. Louis 3, Mo. It has a unit range of 24 inches vertical, 14 to 24 inches horizontal, and 4 inches lateral movement—powered by individual lever controlled, full hydraulic pump. Illustration shows the dock board extended horizontally and at the extreme top of vertical rise, being operated by manual lever control mounted on pump. A solenoid operated push-button control can also be furnished, concealing the pump under the board. Printed matter available.

NEW SELF-LOCKING NUT NAMED "LOKUTS"

The Illinois Tool Works, Chicago, announces the selection of "Lokuts" as the new trade name for its line of torque type self-locking nuts. The nuts, distributed by the Shakeproof, Inc. division, 2501 No. Keeler Ave., Chicago, are manufactured under an exclusive license from the Boots Aircraft Nut Corp., Stamford, Conn., and were formerly sold under the tradename Tri-Lok. The nuts are available in a broad range of standard nut sizes, provide extremely effective resistance to vibration loosening, and have the advantage of locking at any position on a bolt.

(*Please turn to page* 268)

LOOKS right!

Beautifully constructed of gleaming stainless steel, it looks and performs like a thoroughbred.

WORKS right!

Made stronger, lighter and safer and it will give you many years of trouble-free operation.

PRICED right!

You'll be amazed at how inexpensively you can guard against fire with this superior extinguisher.





Kidde's New 2½ Gallon

WET CHEMICAL STAINLESS STEEL FIRE EXTINGUISHER

gives you more for your money!

All stainless steel shell means greater strength, lighter weight, safer construction, years of reliable service . . . with the same instantaneous action and sure protection against fire that Kidde has always given. Transparent nozzle lets you see at a glance that nozzle passage is clear. Permanent nameplate with directions can *not* fall off.

Take your choice of clear water, soda-acid or foam type and get all the advantages of Kidde construction and Kidde "know how." Also available in an Anti-Freeze type, made of silicon bronze, which eliminates the danger of corrosion that usually results from the Anti-Freeze solution.

Ask your Kidde Dealer or write us for complete information today.

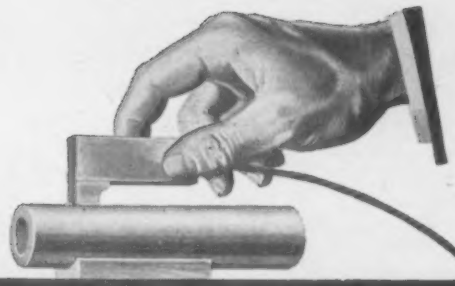
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Walter Kidde & Company, Inc., 1047 Main St., Belleville 9, N. J.
In Canada: Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.


STANDARD GROUP
QUALITY GROUP
MASTERGAUGE GROUP
CONSTRUCTION OF "STANDARD" GROUP
CONSTRUCTION OF "QUALITY" GROUP
CONSTRUCTION OF "MASTERGAUGE" GROUP
A gauge for every need... each the best of its kind
Three basic groups of Marsh Gauges are shown here:
• The "Standard" group for the general run of gauge services.
• The "Quality" group for tougher service conditions.
• The "Mastergauge" group for the most extreme conditions.
While there is a considerable difference in the design and construction through these groups, the choice of a Marsh Gauge for a given application depends squarely upon the service condition.
This is because all Marsh Gauges — from lowest price to highest price — are high quality gauges. Each group or series contains the best gauges of their kind.
That is why you should use Marsh Gauges. Select the right Marsh Gauge and you use the most economical gauge for your requirement. We will help you select it.
Write for New Catalog.
MARSH INSTRUMENT CO.
Sales affiliate of JAS. P. MARSH CORP., DEPT. G, SKOKIE, ILLINOIS
MARSH GAUGES
THE STANDARD OF ACCURACY



TO THE NAKED EYE...



...TO THE PROFILOMETER

Better Surface Finish

WITH ROCKRITE TUBING





Here's why! The grain structure of the metal in Rockrite Tubing is finer, more uniform because the tube is sized under *compression* instead of by conventional sizing under tension.

How you save—Rockrite's *better surface finish* often eliminates the need for an additional finish cut. It also reduces grinding and polishing operations in many applications.

What's more, lighter close-tolerance Rockrite Tubing permits higher cutting speeds and substantially lowers over-all machining costs.

QUICK QUIZ —What are the *three* requirements essential to tube accuracy and lower cost machined parts?

ANSWER —You'll find it in the new 16-page illustrated Rockrite Bulletin. Send for your copy today.



ROCKRITE TUBING

Rockrite Saves More Than Any Other Tubing

- Higher cutting speeds
- Tools last longer between grinds
- Work-surface finishes are better
- Machined parts have closer tolerances
- Stations on automatics are often released for additional operations
- Extra-long pieces available—less downtime for magazine stocking and fewer scrap ends
- Closer tolerances often eliminate necessity for machining on outside or inside

TR-117

TUBE REDUCING CORPORATION · WALLINGTON, NEW JERSEY

BARNES METAL CUTTING SAWS



FAMOUS BLADES IN ACTION

The RAPIER

The appearance of the Rapier at the turn of the 17th Century heralded a new, flashing, lightning-like precision in the art of swordsmanship. This famous blade was made possible by the great skill and experience, in the art of metal working of armourers such as those who produced the famous Toledo blades. The fame of the Toledo blade was the result of uniformity and dependability.

Skill and experience in the processing of metals combined with the development of new techniques, new equipment and a conscientious attention to all details of manufacture are all part of the craftsmanship in every Barnes saw blade. Wherever production metal cutting is a function of manufacturing—Barnes saw blades are famous for their economy and dependability.





Whether you use Power Hack Saw blades, Band Saw blades, or Hand blades—you'll find Barnes Saw blades dependably efficient.

THE RIGHT SAW FOR A BETTER JOB

Call your Industrial Distributor on any metal separating problem. He or a Barnes Service Engineer will be very pleased to assist you in any way possible.

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Your local Industrial Distributor carries a complete stock of Barnes Blades for your convenience. You can depend upon him for service and advice.

BARNES Established 1919

W. O. BARNES CO., INC.

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FIBERGLAS REINFORCED HOT MATERIALS CONVEYOR BELTS CUT COSTS

Substantial dollar savings are reported by three typical industrial users of hot materials conveyor belts, reinforced with Fiberglas yarns, according to Roy J. Black, Industrial Textile Products Division manager, Owens-Corning Fiberglas Corporation.

Performance data received from the three companies indicate that conveyor belts, using a combination of Fiberglas and other reinforcing textile yarns, operate efficiently several times longer than belts with all-cotton reinforcement, Mr. Black reported.



For carrying quicklime averaging 300° F., this conveyor belt, reinforced with Fiberglas and cotton yarns, was reported by a chemical firm still to be in good condition after 17 months and four days of service. Its average monthly operating cost was $75.50, as against $188.60 for two cotton belts, previously used, which gave combined service of only six months, eight days

A large eastern foundry utilizing conveyor belts to carry hot sand has to date obtained more than 3,200 hours' satisfactory service from a belt having Fiberglass reinforcement, he reported. In contrast, four belts with all-cotton reinforcement averaged only 918 hours' service each, under comparable conditions.

Based upon these performances, Mr. Black noted, the belt with Fiberglas reinforcement has to date cost the foundry only 57 cents per operating hour, as against an average hourly cost of $1.18 for the all-cotton belts.

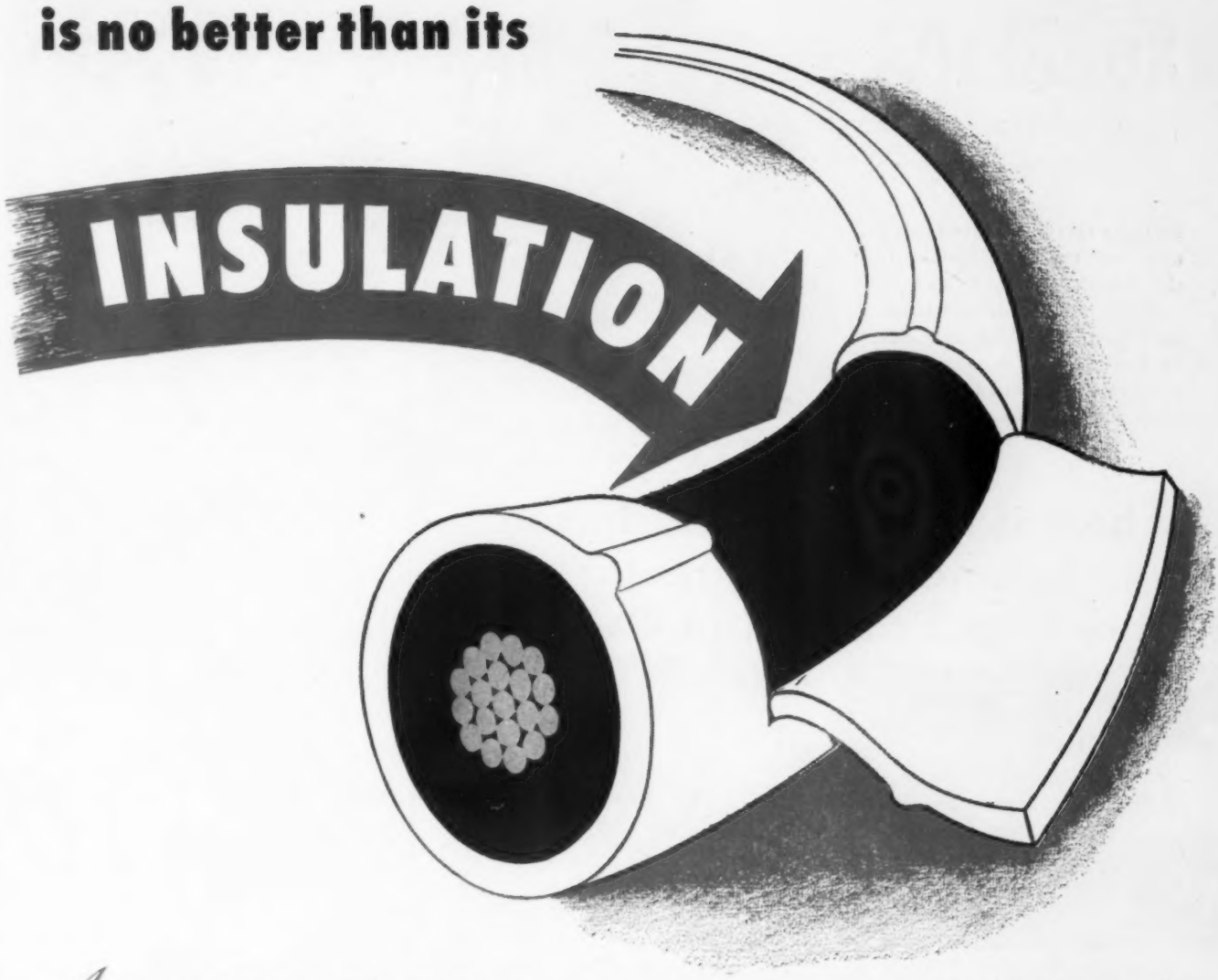
In a major chemical producer's plant, comparison studies were made of belts used for carrying quicklime, averaging about 300° F. A conveyor belt with Fiberglas-cotton textile reinforcement performed here for a consecutive 17 months and four days, at a monthly cost of $75.50. In contrast, two belts with all-cotton reinforcement gave combined service of only six months, eight days, costing the company $188.60 per month.

A third firm, whose conveyor belts carry hot coke, reported a 50% monthly reduction in operating costs from a belt containing Fiberglas reinforcing yarns. This conveyor lasted four times as long as any belt with all-cotton reinforcement previously used, it was reported to Mr. Black.

Use of Fiberglas yarns with other textiles provides effective reinforcement

(*Please turn to page* 270)

an electrical cable is no better than its



An electrical cable is only as efficient and long-lasting as its insulation. You will find true cable economy *only* in the cable with the best insulation. Because electrical insulation is so vital to cable performance, it is important to know what makes one type of insulation better than another.

There are three basic factors determining the electrical and mechanical characteristics of rubber cable insulation.
1. The type and grade of rubber used in the compound.
2. The method of applying the insulation to the cable.
3. The method of vulcanizing the insulation.

In Okonite insulations, each of these three points is a reason for superior performance. First, Okonite uses only Wild Up-River Fine Para rubber – the very finest obtainable – because this rubber has proved during more than 70 years of actual use to have better dielectric and aging qualities than any other.

Second – the unique Okonite strip method of applying insulation assures absolute uniformity of wall thickness . . . perfectly centered conductors. This advantage, guaranteed only by the strip method, is another reason for the famous long life and dependability of Okonite-insulated cables.

Third – after the insulation has been applied by the strip method, it receives a *single* vulcanization in a continuous tin mold, under high pressure. Advantages of this exclusive process are an insulation of higher density, greater physical and electrical uniformity.

Years of operation under widely varied conditions – the most convincing test of all – *prove* the longer life and more dependable performance you obtain from an Okonite insulation. The Okonite Company, Passaic, N. J.

8107



THE BEST CABLE IS YOUR BEST POLICY

OKONITE OKONITE SINCE 1878 *insulated wires and cables*

Want Additional Product Information? See Page 19.

SUPERIOR
in more than name

To make every gray iron casting meet your exact specifications is the aim of Superior Foundry's complete staff of production casting experts. Such high standards require organization, experience, modern equipment and never-ceasing "Quality Control."



This casting, used in earth moving equipment, had to be produced to precise pattern tolerance because it is finished by multiple machining operations.

...here is the modern equipment behind every Superior Gray Iron Production Casting



Complete Electric Furnace Process



Continuous Drying Ovens



Complete Metallurgical Control



High Speed Continuous Mold Conveyors

THESE are just a few of the modern facilities that enable Superior to produce castings ranging from 1/2 lb. to 1200 lb. in any quantity and to your particular specifications. Whether you want straight cupola gray iron or electric furnace iron castings with or without alloys, you'll discover that Superior Foundry's complete metallurgical control assures uniform grain structure, adherence to your specifications and a clean, smooth finish. Bring your production casting problems to us today.

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VUlcan 3-8000

(*Continued from page 268*)

for hot materials conveyor belts because it combines good rubber adhesion with the great strength of Fiberglas yarns under heat — 90% of original at 450° F. In addition, glass yarns are dimensionally stable, a property which reduces rubber fatigue thereby extending belt life.

Certain property advantages of Fiberglas textiles over other materials have led to their acceptance in many other fields — as reinforcements for plastics, papers, tapes and vinyl-coated cloths; for electrical insulation, and to weave fire- and wrinkle-resistant decorative fabrics.

Since 1944, Owens-Corning has been working, in cooperation with leading mechanical rubber manufacturers, to perfect the application of Fiberglas yarns as reinforcement for hot materials conveyor belts. Seven of these manufacturers are now producing belts with Fiberglas yarns as reinforcing material.

REVISED MANUAL ON "DESIGNING WITH ALUMINUM EXTRUSIONS"

BASIC engineering principles for most effective use of extruded aluminum shapes are well explained and illustrated in the 1950 edition of the 138-page book, "DESIGNING with ALUMINUM EXTRUSIONS", just issued by Reynolds Metals Company, 2500 South Third Street, Louisville 1, Ky. The books are available without charge on company letterhead.

The new book breaks down the advantages of the extrusion process into eight principles of design. Then each of these is illustrated and explained in detail by use of diagrams, charts and pictures of actual parts.

The section on examples of effective extrusion design contains more than 140 illustrations showing details of specific applications. This section alone contains a wealth of material to "trigger" the designer's imagination.

The section on manufacturing possibilities explains the broad range of shapes that can be produced by the extrusion process. Another chapter correlates shape design with manufacturing limits and shows how many of these limitations can be offset by proper design.

The characteristics of aluminum itself, the selection of the correct alloy and temper, fabricating properties, finishes, and cost factors are also covered as separate chapters in the book.

In addition, the tabular section presents 16 tables (22 pages) of data on chemical, mechanical, and physical properties of aluminum; extrusion process data such as minimum thicknesses, maximum lengths, tolerances, difficulty factors and the like. Condensations of finishes and joining methods form two tables of special value.

This 138-page, 6 x 9-inch pocket size book is complete with more than 390 illustrations, a table of contents, index of tabular material, index of illustrations, and an itemized cross index covering text, illustrations and tables.

(*Please turn to page 274*)

You benefit from this dramatic new campaign in the



THE SATURDAY EVENING **POST**

Public urged to look for Phillips Screws —the clue to quality . . . found on all modern products

BEGINNING AUGUST 26, a striking campaign on Phillips Screws was launched in The Saturday Evening Post. Aimed at the general public, it tells 14 million readers to look for the mark of extra quality in well-built products *. . . the identifying X that appears on the head of Phillips Cross-Recessed-Head Screws.*

Whether you use Phillips wood screws, machine screws or tapping screws, you benefit from this forceful quality story. Remember, too, when you use Phillips Screws you build a better product . . . save time, money, work-hours.

Be sure to put the "clue" to extra quality in your product.

PHILLIPS *Cross-Recessed-Head* SCREWS

✕ *marks the spot . . . the mark of extra quality*

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP.
CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP.
GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP.
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
SHAKEPROOF INC. • THE SOUTHINGTON HDWE. MFG. CO. • WALES-BEECH CORP.

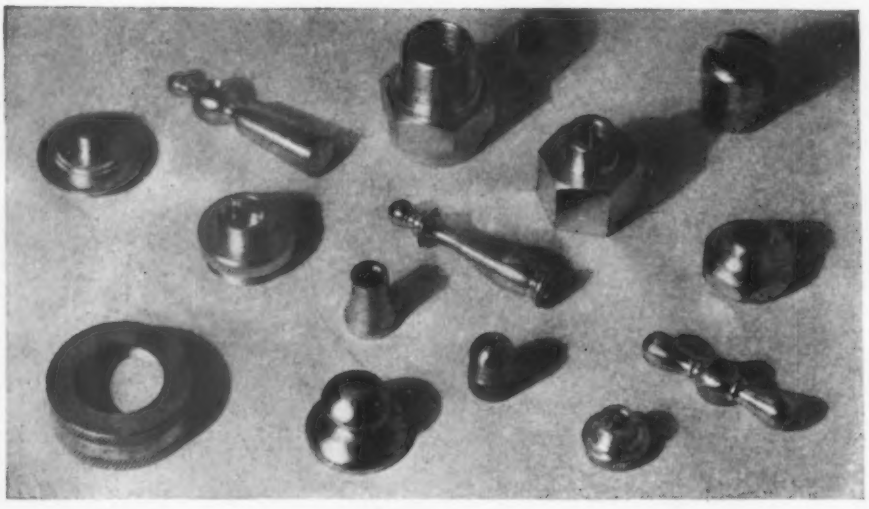


THE FASTENERS OF TODAY . . . AND OF THE FUTURE

COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" *Headquarters for BRASS, BRONZE and COPPER*



Screw Machine Products . . .

For Reducing Costs and Product Improvement

Craftsmanship in brass can hardly be better illustrated than by the typical screw machine samples, shown above. These were kindly submitted by the Ansonia Manufacturing Co.

We are all familiar with most of these parts — faucet handles and bonnets; caps of various shapes; knobs, couplings, spray nozzles, etc., which, of course, hardly show the variety and versatility of screw machine products.

Many Brass Alloys Available

Ledrite 6, high speed free-turning brass rod, stocked in our mills and in our warehouses, is ideal for turning, machine threading and broaching. Ledrite 6 (machinability rating 100%), contains about 61% copper, 3.4% lead and balance zinc and satisfies about 90% of screw machine needs.

Items requiring knurling or roll threading may find the standard temper of Ledrite 6 too hard and may require a softer temper.

Some operators prefer Ledrite 2 medium leaded (1.8% lead) for knurling and roll threading because its lower lead content makes it somewhat more ductile.

For a rich bronze color to match cast bronze, use Leaded Commercial Bronze 89, copper 89%, lead 1.75%, zinc remainder (machinability rating 80%.)

For corrosion resistance to sea water, Naval Brass 24 (machinability rating 30%) is often used. Medium leaded Naval Brass 28, containing 0.6% lead (machinability rating 50%) and Leaded Naval Brass 29, containing 1.75% lead (machinability rating 70%) are often used for improved machinability.

Lower Finishing Costs

There has been a definite trend to screw machine products because of possible reductions in finishing costs. The smooth surface of the rod as it leaves the mill and the skill of the screw machine operator to produce a finish which requires the minimum of surface removal for high polish mean less polishing time with correspondingly lower requirements of polishing compounds, buffs, etc. Freedom from porosity and surface defects, and accuracy of shape of screw machine products mean fewer rejections and ultimate lower cost per piece.

Product Improvement

Design and mechanical engineers are not confined to brass alone for items requiring exceptional strength and resistance to corrosion and wear. Silicon bronzes and aluminum bronzes offer many possibilities for improving existing products such as valves, connectors, fittings, electrical and mechanical devices, and controls.

Brass Makes Durable, Safe Poultry Watering Unit

Corrosion resistance, cleanliness and speed of machining makes brass an ideal material for automatic watering devices used either in the henhouse or in the barnyard.

Since a steady flow of clean water is necessary to insure healthy poultry, dependability of a drinking fountain is essential.

The excellent machinability of brass permits rapid turning and threading of the tubing used for the valve body. Free-cutting hexagon Ledrite 6 brass rod is used for the intake nut. Round Ledrite 2 medium-leaded brass rod is used for the knurled and threaded cap which is easily produced in a screw machine at high speeds.



Little Giant Drinking Fountain with portable stand. Courtesy Miller Manufacturing Co., St. Paul, Minn.

BRASS • BRONZE • COPPER • DURONZE — STRIP • ROD • WIRE • TUBING

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BRIDGEPORT, CONNECTICUT
INDIANAPOLIS, INDIANA
In Canada:
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BEFORE you do anything else, fill out and mail the coupon below for your free copy of Bakelite Division's new "Simplified Guide to BAKELITE and VINYLITE Plastics and Resins."

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Want Additional Product Information? See Page 19.

Sawyer's

NEOPRENE LATEX PROTECTIVE WEAR

gives more

PROTECTION

per dollar



Three years of actual, on-the-job testing have proved that Sawyer's NEOPRENE Latex Aprons are the most efficient and economical on the market.

Here's why: Sawyer's protective wear is *not* made from ready-made fabrics but from the highest quality base fabrics coated with Sawyer's own industry-proved and tested Neoprene Latex. That's why Sawyer's Neoprene Latex Aprons give *complete* protection against gasoline, kerosene, vegetable and petroleum oils, greases, alkalis and acids.

Sawyer's Neoprene Latex Aprons are *designed for the jobs they do;* they're roomy and comfortable and 100% waterproof. Available in black *or* yellow.

#576 – with patch – 34" x 48"
#586 – no patch – 34" x 48"
#596 – women's apron – no patch – 28" x 34"

Write for Sawyer's catalog of Occupational Clothing.

THE H. M. SAWYER & SON COMPANY
21 Thorndike St., Cambridge, Mass.

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The H. M. SAWYER & SON CO., CAMBRIDGE, MASS.

NEW SILICON LAMINATION PERMITS REDUCED TRANSFORMER STACKS

A new oriented silicon lamination which permits reduced transformer stacks with resultant savings in materials and weight is announced by the Thomas and Skinner Steel Products Company, Indianapolis 7, Indiana.

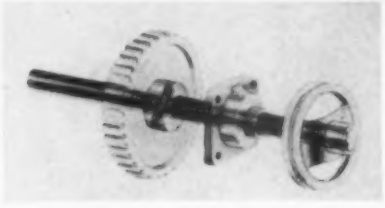
Outstanding characteristics of the new lamination is higher permeability, with lower core loss. As a result, the oriented silicon material offers transformer designers greater efficiency with the normal number of E's and I's, or equal efficiency with fewer laminations.

Performance curves indicate that stacks may be reduced as much as 50 per cent in some cases, with resultant savings on copper and weight.

The new oriented silicon laminations are available in standard E and I designs and sizes as well as for special applications. Bulletin giving full data and curves is available.

ROLLPIN, ALL-PURPOSE PRESSED FIT HEADLESS SELF LOCKING FASTENER

Rollpin is the name of a new product developed by the Elastic Stop Nut Corporation of America 2330 Vauxhall Road, Union, N. J., which introduces a new idea of design and application in metal fasteners. It is a self-locking pin with chamfered ends, engineered to replace the variety of dowel, pivot, tapered and grooved pins which ordinarily require a key or supplementary fastening.



Rollpin here secures pulley and gear to shaft.

Made from SAE 1095 steel (also Type 420 stainless steel and beryllium copper), the Rollpin is a piece of metal rolled into a shape of a cylinder with a gap or slot which parallels the long axis of the hollow cylinder. Both ends of the cylinder are chamfered, or beveled, so the pin can be driven and compressed into a hole that is, by design, smaller than the diameter of the pin. The slot permits compression of the cylinder as the pin is driven in and the resulting tension, caused by the constant pressure exerted by the pin against the walls of the hole, secures it in position even against extreme vibration and shock.

The Rollpin is not a headed type of fastener and hence does not have to be held in position by a nut or other type of fastening. The slotted cylindrical design affords a high pressure, shake-

(*Please turn to page 276*)



We've made them for others, we can make them for you

(and smaller sizes, too, of course)

YES, we have been supplying these big U·S·S Stainless Steel angles for some time. Many of them have been used for the gateways of flood control dams. And we have made 6" x 4" Stainless angles, too, for the catapult trackways of plane launchers on Uncle Sam's aircraft carriers.

If you are in the market for equally big Stainless Steel angles or for other structural shapes in dimensions beyond the ordinary, here's the place to come.

In U·S·S Stainless Steel, you can obtain not only the widest range of sizes, but a complete selection of compositions and finishes as well. And, in addition, the services of our trained Stainless Steel engineers are available to you. They will assist you in selecting a material that fits perfectly the requirements of the job.

Remember, too, that U·S·S Stainless Steel is a perfected, service-tested material, subjected to stringent control and close observation at every stage of production. It's *made* to give you the finest in Stainless performance.

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COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
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O-1653

UNITED STATES STEEL

Want Additional Product Information? See Page 19.

TRIPLEX FOR TOUGHNESS



CAP SCREWS to 1" x 8" | SET SCREWS to ¾" x 4" | MACHINE BOLTS to 1" x 60" | STEP BOLTS to ½" x 6"



CARRIAGE BOLTS to 1" x 60" | PLOW BOLTS to ¾" x 20" | STOVE BOLTS to ½" x 6" | LAG BOLTS to ¾" x 20"



NUTS—Semi-Finished, Cold Punched, Hot Pressed, Castellated
SIZES ¼" to 1¼"

TRIPLEX makes all the important fasteners and makes them *Tough!*

Manufacturers, jobbers and dealers prefer TRIPLEX for ECONOMY too!

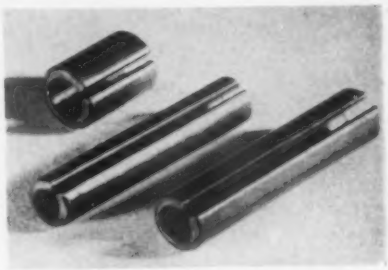
Write for our catalog and wall chart for easier ordering.

The TRIPLEX SCREW *Company*
5317 Grant Avenue • Cleveland 5, Ohio

TRIPLEX *for* TOUGHNESS
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

(*Continued from page* 274)

proof grip in holes drilled to normal production tolerances, and as a result hole ramming operations are unnecessary. The pin is rapidly inserted with hand tools or automatic jig, and is simply removed by driving it out with a drift pin or pin punch. The pin retains its locking characteristics through repeated insertions, and its shear strength exceeds that of a cold rolled pin of equal diameter.



Three of the 13 diameter sizes of the Rollpin. Chamfered ends allow pins to be driven into pre-drilled hole, and slot along axis of cylinder permits compression of pin in the hole.

Applications of the Rollpin fall into the following five general groups: As fastening pins, pivot or hinge pins, cotter keys, shafts, and dowels.

The pins are being manufactured in 13 sizes to fit hole diameters ranging from .078 (5/64") up to .500 (½"). They are available in stock lengths beginning with 3/16" in smaller diameter pins. Pins made from beryllium copper are not generally available from stock.

Sample and printed matter available upon request.

SOLVENT FOR ODORLESS PAINT NOW AVAILABLE FROM SHELL

Shell Oil Company has completed a new plant specifically designed to produce solvents for odorless paint, at its Wood River, Illinois refinery.

According to Fred Preu, assistant manager of Shell's special products department in New York, the new solvent is only available at the present time in tank car quantities. However, the company will provide individual drums for testing purposes until such time as arrangements can be completed for tank wagon and drum distribution through distributors.

Preu emphasized the care that must be taken in the shipping of these so-called odorless solvents. Contamination can easily result if they are shipped in facilities retaining pungent odors. Likewise, it is important that manufacturers continue special handling on receipt, for use of a contaminated solvent will cause the paint to smell and thus defeat its purpose.

Preu also advocated that manufacturers make available to their customers extra supplies of this solvent for thinning the paint. The use of turpentine or other thinners will again cause a noticeable odor.

(*Please turn to page* 280)

Fingers That Grip So Cartons Don't Slip!

QUAKER "SAFETY-GRIP" ROUGH-TOP BELTING ELIMINATES BACK-SLIPS ON INCLINES AS HIGH AS 42°

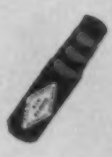
On floor-to-floor conveyors . . . on portable conveyors . . . Quaker "Safety-Grip" Rough-Top Belting is piling up records for low cost, positive performance in moving slippery cartons, bags, crates, cans and other materials up steep inclines.

Such performance is made possible because of Quaker Safety-Grip's revolutionary departure from conventional belt construction. Thousands of tiny, rough, irregularly-shaped "fingers" of live rubber are on the belt's surface. They take hold and prevent back-slips. The duck is specially woven and scientifically impregnated with rubber . . . provides even loading of all plies and makes the belt run true. The non-slip qualities of the friction side of the belt assure proper traction even over the smallest of pulleys.

Tell your local Quaker distributor your industrial rubber needs. He'll recommend the right type of product from Quaker's complete line of *pre-tested* conveyor and elevator belting, transmission belting, F.H.P. and multiple V-belts, moulded and wrapped hose, and moulded products. When you "Quakerize" you economize!

HOSE THAT STANDS WEAR AND ABRASION

Hose for air, steam, water, oil, gas, chemical, paint, or fire—Quaker makes it to fit every industrial requirement. Every length is *pre-tested*—assuring peak performance.



MORE POWER FOR PRODUCTION

In the complete line of Quaker transmission belts and belting, *pre-testing* plays a vital part in providing long service, tight grip, slip-less power. Both V and Flat types . . . transmission and conveyor for all purposes.



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MISSOURI, KANSAS, OKLAHOMA and TEXAS

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Just phone your nearest Katy representative and tell him *what* you have to ship and *where* it's going.

From then on, Katy's safe, modern, ON-TIME *L. C. L.* service takes over until shipment is delivered to your customers' door.

Free pick-up and delivery
***from* and *to* shippers' door**

All cars are worked at our freight houses day of arrival.

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NATURAL ROUTE SOUTHWEST

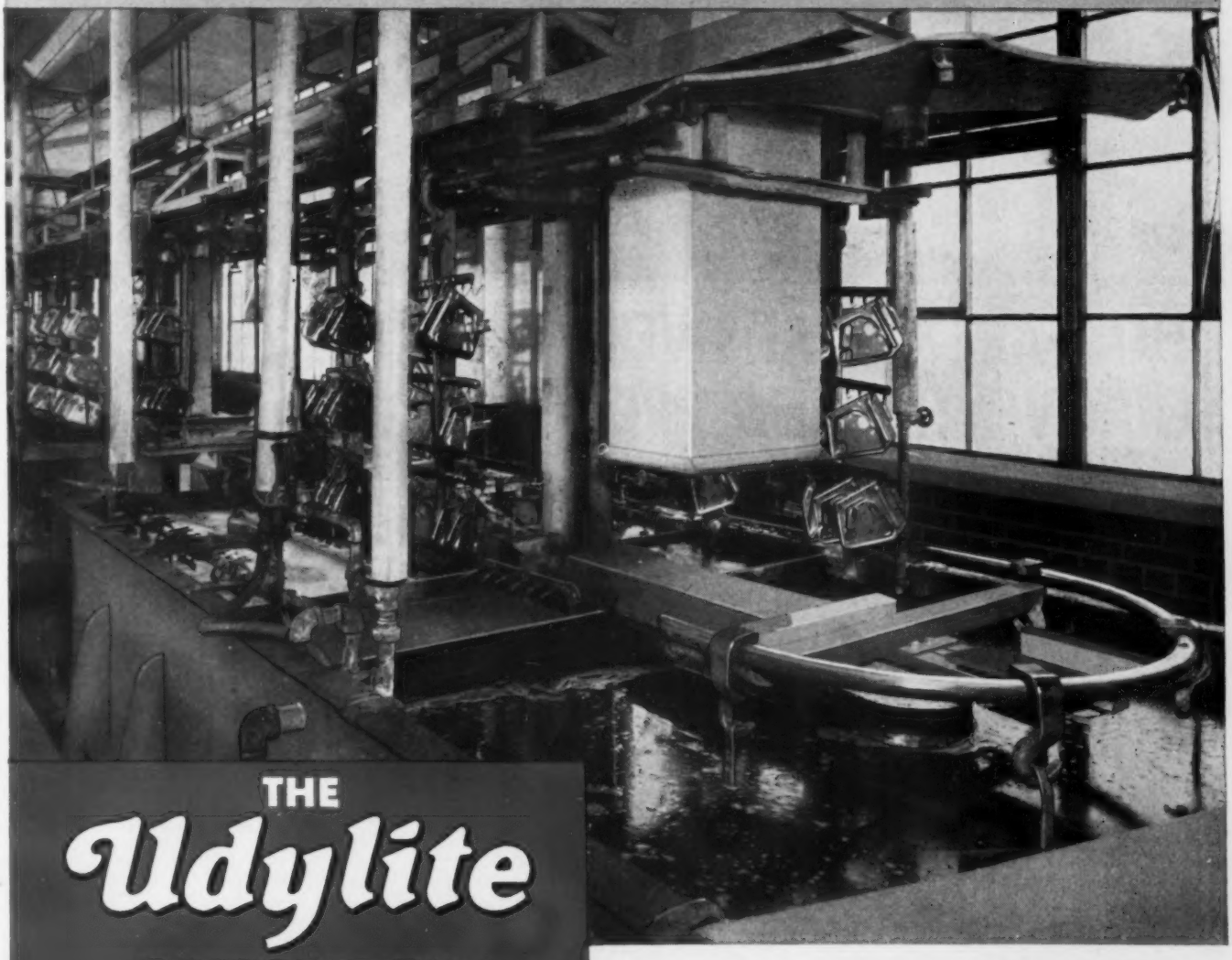
42

5 days FROM FACTORY TO FULL OPERATION FOR THIS Udylite FULL AUTOMATIC

That's right. This Udylite Full Automatic Plating Machine at Howard Plating Industries, Inc., Detroit jobber, was shipped on Thursday and in full operation the following Tuesday. This rapid installation is a matter of course with Udylite. For Udylite Full Automatics are completely assembled at the factory—ready to run at the turn of a switch. Installation is merely a matter of moving in the equipment—hooking it up and filling the tanks with solution. Naturally, this feature pays off with lower installation expense and a minimum of lost production time.

There are many other advantages to Udylite equipment, too. Horace Jones, plating superintendent of Howard Plating Industries, reports: "*Our new Udylite Full Automatic has been operating 18 hours a day, six days a week, for over a year. It's a 100% jobbing operation, zinc plating everything from jet engine parts to dime store novelties. We've spent nothing on repairs and very, very little on maintenance. Production is up 25% and we've cut labor costs in half. Believe me, we're really sold on Udylite.*"

Udylite Plating equipment can bring many advantages to *your* plating operations. Call in your Udylite Technical Man today, let him analyze your problems and show you the way to more profits in plating—or write us direct.



THE Udylite CORPORATION
DETROIT 11, MICHIGAN

PIONEER OF A BETTER WAY IN PLATING



HERE ARE THE ANSWERS TO YOUR VENTILATING PROBLEMS

Write for these authoritative new Emerson-Electric Bulletins today . . . no obligation!

These new, helpful, Emerson-Electric Bulletins contain practical information on ventilation for plants, offices, and institutions . . . based on Emerson-Electric's 59 years of experience as a leader in the field. They give you suggestions for planning effective fan installations, together with complete product information on dependable Emerson-Electric Exhaust Fans and Air Circulators.

Remember—proper ventilation *pays*—in terms of increased efficiency, higher morale, satisfied customers. Send the handy coupon for your copies today!

FREE!

Without obligation, send me the Emerson-Electric Bulletin(s) checked, together with current price lists:

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St. Louis 21, Mo.

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MOTORS • FANS APPLIANCES

PHOSPHORIC ACID SUPERIOR FOR CLEANING HIGH PRESSURE BOILERS

Important advantages in the use of phosphoric acid instead of hydrochloric acid for the cleaning of modern, high pressure, high heat-input boilers were reported at the semi-annual meeting of the American Society of Mechanical Engineers, in St. Louis. T. E. Purcell, general superintendent of power stations, and S. F. Whirl, chief chemist, power stations department, Duquesne Light Co., Pittsburgh, Pa., co-authors of a paper, said that inhibited phosphoric acids removed rust and mill scale from new boilers and water-formed insoluble deposits from serviced units without the limitations and adverse effects associated with inhibited hydrochloric acid.

"The principal advantage of phosphoric over hydrochloric acid," they said, "is that it can be boiled in the unit by direct firing of the boiler with negligible attack of the metal. This is possible because the inhibitor is effective at these temperatures. In addition to the beneficial washing action, the resulting natural circulation promotes distribution and provides a sufficiency of acid at the desirable locations at all times. Furthermore, the boiling operation sends solutions into certain regions at the top of the boiler which otherwise could not be reached except by recirculation with an elaborate system of internal baffling.

"By contrast, inhibited hydrochloric acid can be used only at temperatures below 150-165 degrees Fahrenheit. Above this temperature, the effectiveness of the inhibitor decreases with progressively more severe attack of the boiler metal. With hydrochloric acid, the acid cleaning process must therefore consist either of 'soaking' or recirculation with external heating."

It was found that a five percent inhibited phosphoric acid solution boiling at atmospheric pressure gave good deposit removal, negligible attack of metal and a surface resistant to rusting.

IMPORT DIFFICULTIES

It has been brought to the attention of ECA that the efforts of American firms to buy abroad have sometimes been frustrated, or made extremely difficult, by the unwillingness of foreign manufacturers to sell in the United States Market. The main reason seems to be the feeling that they cannot count on the United States as a permanent market, and therefore they prefer to concentrate their selling efforts in what they consider a more permanent market.

The Office of Small Business would like to be informed of specific instances where American firms would like to import foreign-made products but so far have been unable to do so. These instances will be referred to the ECA Office in Paris which will investigate nd report on the matter.

(*Please turn to page* 284)



Above: Counterboring a hole in a cast iron machine base. Uniformity of chips indicates free-cutting action; chip disposal is aided by wide flutes. And when the operation is finished the cutter is removed from the holder with a simple *twist of the wrist.*

HAND DETACHABLE EVEN AFTER THE TOUGHEST CUTS



CONTINENTAL STANDARD DRIVE COUNTERBORES

There's no wedging action in Continental Standard Drive Counterbores. Cutters are removable from the holder with a simple *twist of the wrist,* even after the toughest cuts. Double driving lugs on the cutters engage double abutments in the holders to give a balanced, positive drive that practically is indestructible. Double bearing areas in the drive assure rigidity and proper alignment of cutters and holders. Continental Counterbores are available individually or in sets that include holders, cutters, countersinks and pilots in practical size ranges.



The new Continental Catalog lists various counterbore holders and cutters (in high speed steel and carbide tipped). For your free copy, write on your company letterhead. Please ask for Catalog No. 60681.

CONTINENTAL TOOL WORKS

Division of Ex-Cell-O Corporation

DETROIT 32, MICHIGAN

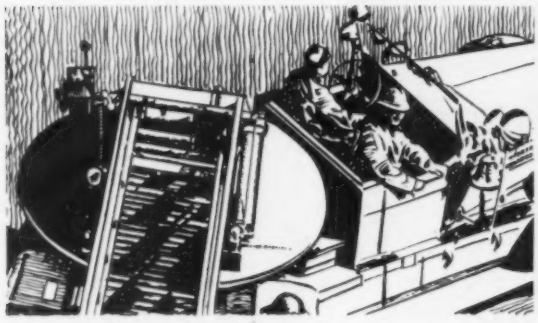
RINGLEADERS in



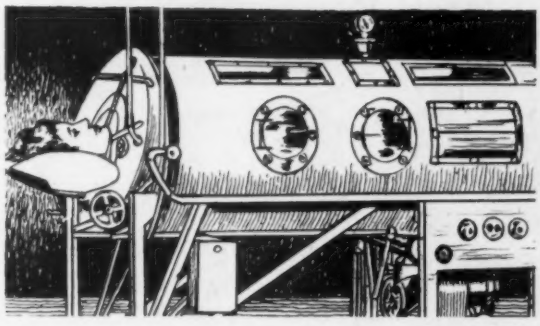
BALDWIN STANDARD STEEL WORKS

Industrial Circles...

When you need *all-round* uniformity in strength and structure, Standard weldless rings will do the job for you. Made from steel produced in Standard's own open hearth furnaces, the composition and properties of the base metal are precisely maintained to specification. Rolling practice reflects 55 years of experience in the manufacture of tires and rings, and the controlled cooling rates and subsequent heat treatment substantially improve service qualities. The illustrations show a few of the many current applications of Standard weldless rings.



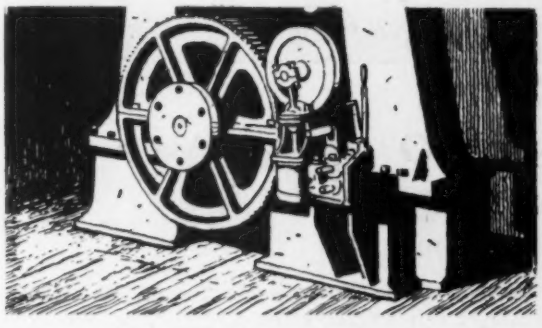
In bearing rings on elevated ladder fire-trucks, Standard weldless rings provide the strength and toughness necessary to withstand the loads.



The iron lung—which has saved the lives of many polio patients—is another important and unusual application of Standard weldless rings.



The unusual support and reinforcement problem encountered in glass-lined milk trucks has been successfully solved by the use of Standard weldless rings.



The uniform structure of Standard weldless rings is highly important in gear blanks where a welded area might affect tooth strength or finish.

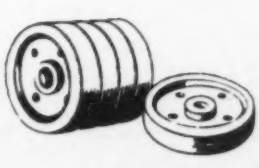
The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pa., U.S.A. Offices: Boston, Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Washington.

NOTICE: DESIGN AND PURCHASING DEPARTMENTS

Standard's three-unit mill, each composed of a horizontal mill and two steam hammers for preliminary operations, can roll practically all sizes of rings up to a maximum of 12 feet outside diameter. Let us quote on your requirements.

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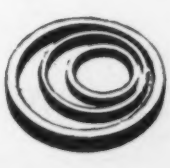
DIVISION



WHEEL MILL PRODUCTS



STEEL CASTINGS



WELDLESS RINGS



FORGINGS

Want Additional Product Information? See Page 19.



ASK US TO QUOTE ON Name Plates

Send us your designs and specifications. Or, if you wish, our Art Department is available to help in preparing distinctive name plates for your products. We will gladly quote on your requirements, without obligation. Etched or lithographed on metal, Ecoa name plates are *permanent marks of distinction* which reflect quality and add sales appeal to your product. They look better—longer.



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FLUX REMOVAL PROBLEM ELIMINATED BY INERT ARC WELDING PROCESS

The Day Company of Minneapolis, fabricators of steel and alloy products for food and chemical industries, recently fabricated aluminum salt bins using the General Electric inert-arc welding process without the use of flux or special cleaning.

The salt bins have an overall height of 10 feet 3 inches, with diameters ranging from six to eight feet. They are fabricated from 61S-T6 aluminum of various gages through ¼ inch. No preheat or special cleaning was used, and because of the bulkiness of the bins, many welds were made in the vertical-up and vertical-down positions.



Aluminum salt bins welded without use of flux.

According to Verner Holstrom, superintendent of the Day Company, the inert-arc-welder eliminated the expensive flux removal problems and nullified corrosive action due to entrapped flux. The inert-arc process is the outcome of fundamental research in the General Electric welding laboratories. Welding aluminum without flux is one of the applications of the process.

PLAN TO DREDGE PIPE LINE TRENCHES UNDER MISSISSIPPI

The Texas Gas Transmission Corporation announces that it plans to dredge two trenches—20 ft. deep—underneath the Mississippi River for two new 20-in. submarine crossings near Greenville, Miss. Plans call for dredging the lines to a depth of approximately 20 ft. below the bottom of the river channel and to carry this depth of trench back a considerable distance into each bank of the river. This method it is believed will protect against failures due to caving banks and scouring of the river bottom. The 20-in. lines will each be 3.4 miles long. Construction will insure against possible failure of gas supply during the coming winter should the Mississippi River change its course and disrupt any of the submarine crossings now in service.

(*Please turn to page 286*)

A complete line—
DISSTON BITE-RITE FILES
from a single good source—
YOUR LOCAL DISSTON
INDUSTRIAL DISTRIBUTOR





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Others in all lines of industry are likewise guarding quality, speeding schedules, and economizing, by using Disston Bite-Rite Files. *Disston Skill* makes each shape and cut precisely uniform. And *Disston Service* is ready to help you get every last penny's worth of good work out of Disston Files . . . and out of any other Disston Tools you buy.



For there is a qualified Disstoneer available to analyze operations for you, and consult with you on applying all Disston Tools most efficiently on any of your work. *Call for a Disstoneer to help you lick the jobs that lick the average tools!*



DISSTON METAL-CUTTING BAND SAWS
You can get the correct types from the Disston line—Hardened Throughout and Hard Edge Flexible Back (in Regular and Buttress Tooth patterns).



DISSTON HACK SAW BLADES
For a wide variety of machine and hand metal cutting operations.
IN THESE TYPES: High Speed Di-Mol Chromol* Duraflex* *Reg. U.S. Pat. Off.

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ABRASIVE SLEEVES, DRUMS AND BELTS
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meet today's finer finishing needs!

Ask for a copy of our No-Lap catalog. It gives complete details on our many time-and-money-saving products for all abrasive purposes. Samples also available on request.

Cleveland Container representatives have the background . . . the knowledge of today's needs to make it worth your while to ask questions.

May we serve you?

Ask also for a copy of our new Folder identifying and illustrating types and sizes of Cleveland Containers.



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Cleveland Container Canada, Ltd., Prescott, Ontario • Offices in Toronto and Montreal



OLD RAILS ARE MADE INTO MANY USEFUL STEEL PRODUCTS

Transforming old railroad rails into useful products, such as fence posts, bedsteads, clothes poles, wheelbarrow handles and playground equipment, keeps about 20 mills busy in the United States and Canada, says American Iron and Steel Institute.

The old rails are not remelted. They are heated to rolling temperature in a furnace and then are sliced into three parts—the head of the rail; the web, namely the middle part of the rail; and the flange or base of the rail. Each of these sections is then rolled to the required size and shape.

Concrete reinforcing bars, structural tubing and light rails are the principal products rolled. Part of the glider on the back porch may once have been a rail carrying streamlined trains.

About 700,000 tons of finished product, mostly bars, are rolled each year from old material such as rails, axles and other products suitable for conversion by hot rolling without remelting. Rails have been used as a source of material for re-rolling since about 1860.

ALUMINUM ROD, BAR AND WIRE PRODUCTS

Availability of a wide range of aluminum rod, bar and wire products is announced by Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.

Expanded facilities at the Kaiser Aluminum mill at Newark, Ohio, now are producing round and hexagonal standard screw machine stock, round forging stock, rivet wire and rod, welding wire, rolled and cold-finished rod, hexagonal bar as well as redraw rod and drawn round wire.

Standard availabilities in alloys and sizes are as follows:

Screw machine stock, round—11S and 17S, ⅛-inch to 3¾-inch diameter; hexagonal, ⅜-inch to 1⅜-inch diameter.

Round forging stock—2S, 3S, 14S, 18S, 25S, 32S, A51S, 61S and 75S from ⅜ to 5½-inch diameter.

Coiled rivet wire and rod—2S, 53S, 17S, A17S, 24S and 56S to 11/16-inch diameter.

Welding wire—43S from 1/16 to ¼-inch diameter.

Rolled and cold-finished rod—2S, 3S, 150S and 52S from ⅜ to 4½-inch diameter; 11S, 14S, 17S, 24S, 61S and 75S from ⅜ to 5½-inch diameter.

Coiled redraw rod—2S, 3S, 150S, 52S, 56S, clad 56S, 17S, 24S, 43S and 61S.

Drawn round wire—2S, 3S, 150S, 52S, 56S, clad 56S, 72S, 11S, 17S, 24S, 61S and 75S from .0126-inch to ⅜-inch diameter.

Aluminum wire products are now being supplied extensively to a wide variety of manufacturers producing such products as slide fasteners, screen wire, nails, rivets, welding equipment, forgings, screw machine items, television ground wire and antenna dipoles and armor rod where aluminum is in increasing demand.

(*Please turn to page* 288)

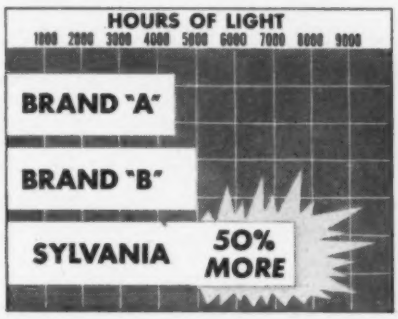
SYLVANIA FLUORESCENT TUBES ARE *50% BETTER* THAN OTHERS!

THE PROOF IS IN! SYLVANIA WINS!



2 years of rigid comparison tests definitely prove that Sylvania Fluorescent Tubes outlast all others. Sylvania tubes, of the most popular types, were compared with those of the two other leading manufacturers.

CHART SHOWS RESULTS! See for yourself the results in the chart below. Note that the Sylvania Fluorescent Tubes lasted 50% longer than brand "B" . . . *more than 60% longer than brand "A".*



Thus Sylvania Fluorescent Tubes provided an "extra life" of approximately 2700 hours over the other leading manufacturers' tubes.

SYLVANIA TUBES STAY BRIGHTER! In addition, they maintained a greater brightness at all times than either brand "A" or brand "B". Measurements were based on photometric standards obtained from the U. S. Bureau of Standards.

All test conditions were identical. Today's continuing tests show no deviation from the original data.

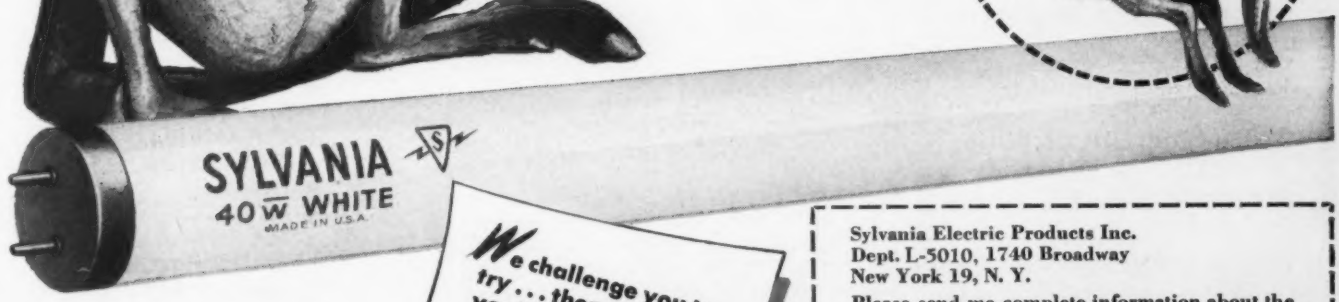
SEE WHAT SYLVANIA'S LONGER LIFE MEANS! The 7500-hour rated life of Sylvania Fluorescent Tubes means that under average conditions they can be expected to last

6 YEARS IN SCHOOLS
3 YEARS IN OFFICES AND FACTORIES
2½ YEARS IN STORES

WHY SYLVANIA LEADS! Sylvania Fluorescent Tube superiority is the result of scientific developments in coating methods and fluorescent powders . . . plus exclusive advances in filamentary techniques.

For full information about the full line of Sylvania Fluorescent Tubes mail the coupon today.





And for 50% more laughs— see Sylvania's "Beat The Clock" on CBS-TV.

We challenge you to try . . . then we know you'll buy SYLVANIA *Fluorescent Tubes!*

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FLUORESCENT TUBES, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; RADIO TUBES; TELEVISION PICTURE TUBES; ELECTRONIC PRODUCTS; ELECTRONIC TEST EQUIPMENT; PHOTOLAMPS; TELEVISION SETS

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In Canada address Sylvania Electric (Canada) Ltd., Drummondville, P. Q., Canada.

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NEW GAUGE MEASURES "NOTHING" BETTER THAN ANYTHING

Almost complete nothingness — man's nearest approach to a perfect vacuum— now can be accurately measured by an electronic pressure-gauge 200 times more sensitive than any ever produced before, according to scientists at the Westinghouse Research Laboratories, Pittsburgh, Pa. The super-sensitive gauge looks like a large radio tube and behaves in a similar manner.

Called an "ion gauge", the new instrument can detect the presence of air in a vacuum where only one air molecule remains out of every 10,000 billion originally present. So rare are air molecules at this pressure that each must travel some 500 miles before striking another. While scientists have gone this far in their quest for a perfect vacuum, until now it has defied measurement. Using the new gauge, pressures that would raise a column of mercury only one-thousandth of a billionth of an inch can be detected.

INDUSTRIAL TRUCK SAFETY ASA APPROVED CODE

Safe practices in the design of industrial power trucks have been established by a nationwide agreement among users, safety engineers, and manufacturers of these trucks, it is reported by the American Standards Association. The recommendations, representing a consensus of all who are substantially concerned, have been published as a Safety Code for Industrial Power Trucks and approved by ASA as American Standard (B56.1-1950).

The standard applies to industrial trucks of both the driver-ride and driver-lead types, such as platform trucks, tractors, low-lift trucks, high-lift trucks, fork trucks, and special purpose trucks. It does not apply to motor vehicles intended for operation on highways.

The standard consists of an introduction and three parts. The introduction defines and illustrates types of industrial trucks, scope and purposes of the code, and gives a bibliography of related safety codes. Part I gives minimum requirements of construction and design features, such as safety locks for forks, operator's platform guards, wheel and chain guards, automatic brakes, and enclosures for electric controls and motors.

Part II outlines general safety regulations, such as qualification and training of operators, battery charging and changing facilities, marking of aisles, and lighting of operating areas. Part III gives specific safety rules and regulations that have been adopted in part or in full in many industrial plants and warehouses.

The new American Standard B56.1-1950 (32 pages, 5 x 7½ in., price 85 cents) is available either from American Standards Association, 70 E. 45th St., New York 17, or from The American Society of Mechanical Engineers, 29 W. 39th St., New York.

(*Please turn to page* 290)

• GIFTS
• PREMIUMS
• AWARDS

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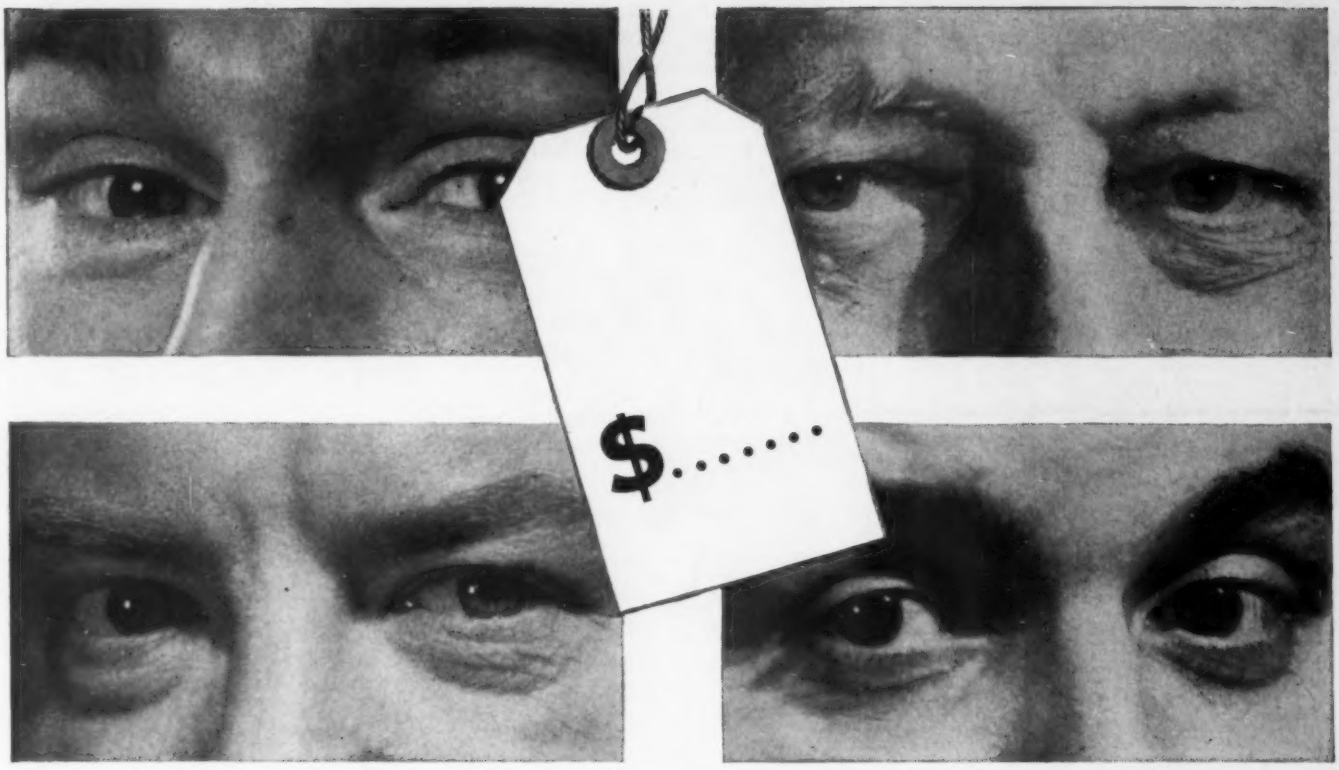
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Four ways to look at a price tag

P. A. Notes:



JOHNNY-ON-THE-SPOT. Timken engineers go anywhere to help you solve bearing mounting problems and to devise ways to simplify assembly.

MEASURES TO MILLIONTHS. This Master Taper Gauging Machine can indicate one-millionth of an inch. It is equipment such as this—plus the skill of Timken workmen—that accounts for the extreme precision of Timken tapered roller bearings.





SILENT SALESMAN. More than 1000 manufacturers use the "Timken bearing equipped" label on their products. It tells customers they use the best in bearings—and it helps sell the product, too.

TOP P.A.'s tell us they look at the price tag on a component part from *four* different angles: (1) the price itself, (2) price in relation to quality, (3) price in relation to manufacturer's service, (4) price in relation to public acceptance.

That's how they determine the true *value* of the part—because the three vital factors of quality, service and public acceptance, singly or together, far outweigh price in importance.

When it comes to tapered roller bearings, you get the most value from Timken.® No other make can match Timken's high quality, Timken's outstanding engineering service or Timken's world-wide acceptance.

Here's a simple formula you might want to keep in mind when buying any component part:

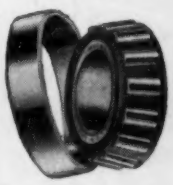
$$Value = \frac{Quality + Service + Public\ Acceptance}{Price}$$

Remember, by this or any other formula, Timken is your best buy in tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

TIMKEN

® TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◎ AND THRUST ⟷ LOADS OR ANY COMBINATION ✳

Heavy-Duty
GEARS



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LARGE GEARS
OF ALL TYPES
up to 12 ft. dia.

When you need large or heavy-duty gears for new industrial equipment—for special machinery—for repairs or replacements—call on SIMONDS GEAR where they have been a specialty for more than 50 years. SIMONDS GEAR assures you of personalized attention to your specific requirements—faithful reproduction of your most exacting specifications—and faster service because SIMONDS' production is geared to specialized work. For all types of heavy-duty gears ranging to 145" dia. in materials including cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite—send your inquiry to SIMONDS GEAR.

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

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BUREAU OF FOREIGN AND DOMESTIC COMMERCE REORGANIZED

Reorganization of the Bureau of Foreign and Domestic Commerce to make its services more readily available to the business community was announced recently by Secretary of Commerce Charles Sawyer.

The reorganization merges related activities formerly carried out by both the Office of International Trade and the Office of Domestic Commerce and is consistent with the recommendations of the Hoover Commission.

Apart from considerations of operating efficiency, Secretary Sawyer said he was "primarily interested in making it easier for the businessman to obtain all available information and assistance on a particular commodity or industry from a single, central source."

The Secretary's action establishes an Office of Industry and Commerce (OIC), abolishing the Office of Domestic Commerce and transferring all of its responsibilities and functions to the new Office. And it consolidates all of the industry-commodity units of BFDC in the new Office.

The Office of Business Economics and the Department Field Service (which together with the Office of Industry and Commerce and the Office of International Trade make up the BFDC) continue essentially unchanged.

H. B. McCoy, who headed up ODC becomes director of the new Office of Industry and Commerce, R. C. Miller continues to head OIT; M. Joseph Meehan continues to direct OBE, and Carlton Hayward continues as director of Field Service.

CONDUIT AND TUBING STANDARDS ANNOUNCED BY ASA

Three new standard specifications for conduit and tubing used as raceways for electric wiring and cables are announced by American Standards Association, 70 E. 45th St., New York 17. They cover zinc coated and enameled rigid steel conduit, and zinc coated electrical metallic tubing. Their purpose is to establish uniform dimensions and standard construction requirements for these products. For the first time, producers of basic steel tubing will have a complete set of manufacturing standards that conform with industry practice and meet all field requirements.

Specifications are based on provisions required by Underwriters' Laboratories, Inc., the National Bureau of Standards, as well as those contained in an existing standard of conduit manufacturers. They include all of the latest known developments in the design and manufacture of these products.

The new American Standards include standard sizes in general use and detailed requirements for coating, threading, identification, couplings, elbows and nipples, tests for ductility, thickness and quality of coating, and inspection procedure.

Included in an appendix, not a part of the standard, is a referee test method for determining the thickness of coating on rigid steel conduit, zinc coated, and electrical metallic tubing. This referee test is to be used in case of disagreement regarding the suitability of the thickness or extent of the external zinc coating.

Eleven national organizations representing maker, seller and user groups participated in their development, including the sponsors: American Iron and Steel Institute and the National Electrical Manufacturers Association. Single copies of the three new American Standards are available from American Standards Association, as follows:

Rigid Steel Conduit, Zinc Coated (ASA C80.1-1950) 50 cents.

Rigid Steel Conduit, Enameled (ASA C80.2-1950) 50 cents.

Electrical Metallic Tubing, Zinc Coated (ASA C80.3-1950) 35 cents.

UTILITY CABINET FOR INDUSTRIAL LABORATORIES



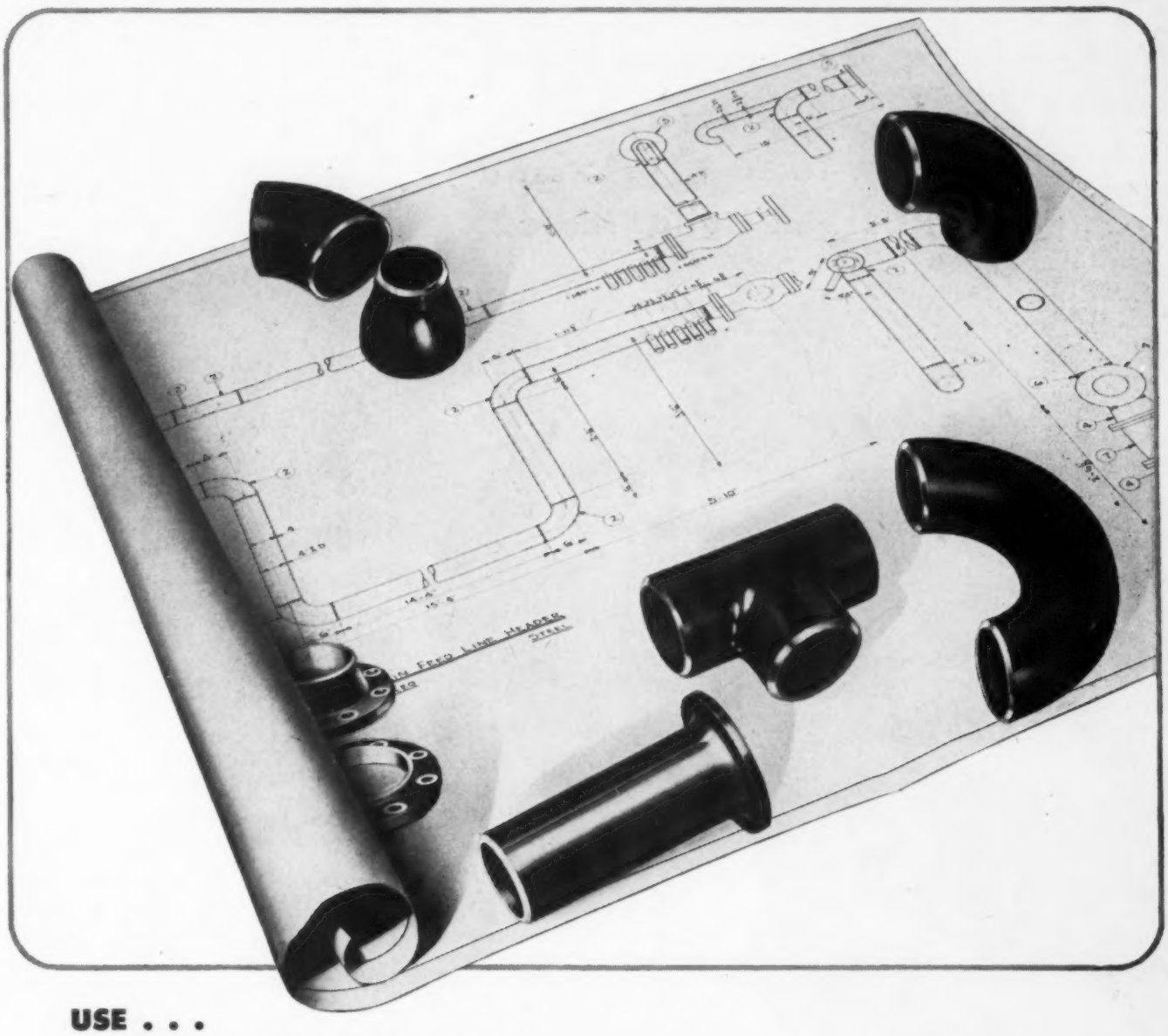
Industrial and private laboratories will find an inexpensive answer to needed storage space and counter work area in porcelain enamel-topped, cabinet utility units, says the Porcelain Enamel Institute, Washington, D. C. These cabinets provide a stain-resistant work surface and convenient storage space for supplies and equipment.

The enclosed below-counter shelves of the cabinets are well-suited for storing laboratory instruments and glassware which should be kept reasonably dust-free. The units are provided with one or two drawers which can hold test tubes, slides, pipettes, filter paper, tongs, and other frequently-needed small equipment.

The porcelain enamel work-top is resistant to weak acids and bases and to most indicators and stain materials. It is heatproof, non-porous, and can be made as chemically clean as laboratory glassware.

(*Please turn to page* 292)

TO DO A BETTER PIPING JOB . . .



USE . . .

GLOBE PRECISION PROCESS SEAMLESS WELDING FITTINGS

When you specify and use Globe Welding Fittings you have the product of an organization with unusually broad metallurgical experience. Globe's precision-process method of production reaches back to the manufacture of the Globe seamless tubes themselves which are the "raw material" of Globe welding fitting fabrication.

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Producers of Globe seamless stainless steel tubes — Gloweld welded stainless steel tubes — carbon — alloy — seamless steel tubes — Globeiron seamless high purity ingot iron tubes — Globe Welding Fittings.



Send for the Globe Welding Fittings Catalog—and look to Globe as a preferred source of supply.

More strength for your money in Cleveland Kaufman-Processed Cap Screws



● Both popular types — bright screws that enhance appearance of machines and products, and heavy-duty high carbon, double heat treated—are made *exclusively* by the *double extrusion method* in our plant. Write for catalog of Cap Screws, Set Screws and Milled Studs.

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SELF-CENTERING ROLL INVENTED BY U. S. STEEL ENGINEER

An ingenious application of a hitherto unused natural force is the basis of a new self-centering roll that promises to revolutionize conveying methods for an almost unlimited list of materials. The principle of "planar action" was built into working models by E. T. Lorig, chief of the senior engineering staff of Carnegie-Illinois Steel Corporation, largest subsidiary of United States Steel, and is now being used in various steel handling applications in Corporation operations.



U. S. Steel inventor defies gravity by a 20 degree uptilt of his circular conveyor model. E. T. Lorig, inventor of the self-centering roll, demonstrates the strong centering action on objects of various sizes, shapes and weights. The conveyor consists of a nest of split conical rolls individually driven.

Fundamentally the Lorig self-centering roll is a slightly crowned roll cut transversely at the center. The two halves are fixed to rotate as a unit. The working surfaces of the two parts are approximately horizontal, while the axles are at an angle. In this way, the planes, or lines of force in both halves twist evenly toward the center in the direction of movement, conferring a self-centering action on any materials passing over the rolls. Sideguards are consequently unnecessary to keep materials on the conveyor.

Various Applications Expected

The rolls have been tested for such a diversity of applications as runout tables, feed and guide rolls for electrolytic tinning, galvanizing and pickling lines, gravity conveyors, belt pulleys and conveyors and similar applications in the steel industry. There is no question that an almost unlimited number of applications for the self-centering roll will be found in other industries as well.

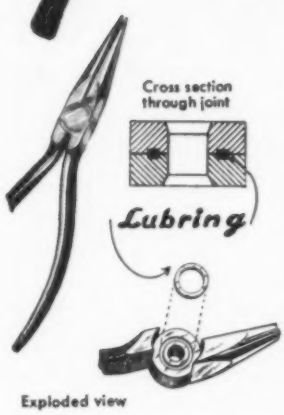
One of the more unusual variations in design is a laminated rubber roll with each of the laminations coned on the same principle as the split-crown roll. A stainless steel belt operating between two of these laminated rolls exhibits the same strong centering action inherent in the original design. In fact, the planar action can of any of the Lorig rolls exerts a greater

(*Please turn to page* 294)

NEWS FROM UTICA

Pioneering and improvements it will pay you to know about

1 PLIERS WITH BUILT-IN LUBRICATION . .



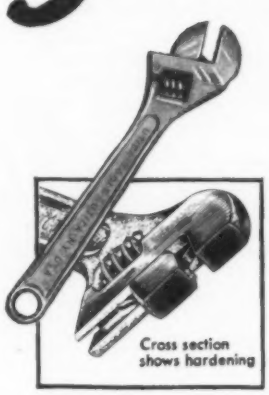
The finest pliers—the LUBRING line—have a ring of oil-impregnated porous iron floating in the joint. The ring slowly feeds lubrication and assures smooth action, long life. Standard equipment for several top utilities.

2 NEW SAFETY AND COMFORT IN SPECIAL HANDLES

Heavy rubber vulcanized handles for insulation—slip-on plastic handles that are non-burning, non-explosive—dipped plastic handles for comfort—handle springs for ease in use. For almost all UTICA tools.



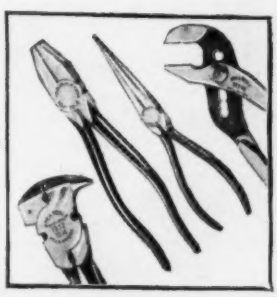
3 WRENCHES THAT LAST TEN TIMES AS LONG . .



Adjustable wrenches with electronically hardened jaw *surfaces.* Resist burring and nicking. Last up to 10 times as long. Their thin pattern was designed to reach the hard-to-get-at places—with *plenty* of strength!

4 80 TOOLS . . 151 SIZES. THE RIGHT TOOL FOR YOUR NEED

You get *exactly* what you want from UTICA! A full line of pliers and adjustable wrenches. Every tool checked in every step of manufacture, and *tested.* For long-run economy in your production line.



Utica Drop Forge & Tool Corporation, Utica 4, N. Y.

BETTER PLIERS FOR EVERY PURPOSE

It pays to use U TI CA quality tools

AND THE WORLD'S BEST TOOLS ARE MADE IN U. S. A.

Want Additional Product Information? See Page 19.



(*Continued from page 292*)

force than gravity. The pulley assembly can be mounted vertically and the metal belt pulled down against the lower pulley housings, yet the belt will rise back to center itself on the split pulleys as the assembly is rotated.

Conical rolls split across the center and nested to form a circular conveyor table exhibit such a strong centering action that objects of any size or shape (other than spherical) being rotated on the table will not deviate from their lines of travel even when the table is tilted from the horizontal.

In its practical applications in the steel industry, the self-centering roll will eliminate the need for table guides and side rails on run-out tables and in many other conveyor applications. Hence edge and corner damage to sheets, strip and plates can be eliminated.

Width of conveyor tables and run-out tables can be reduced to a bare minimum with no edge or corner damage to the material being conveyed or risk to the operator. Gravity conveyors, whether straight or curved, can be built to operate efficiently with no guide rails. Belt drives are practical and safe, even with an overhung take-off. Operating on self-centering rolls, stainless steel conveyor belts are now practical and safe under low operating tensions.

Self-centering rolls are now being manufactured at Carnegie-Illinois Steel Corporation's Johnstown Works.

METAL POWDER INDUSTRY STANDARDS

The Metal Powder Association, 420 Lexington Ave., New York, N. Y., announces the release of two new standards for the metal powder industry. One is a glossary of terms used in powder metallurgy and is designated as M.P.A. Standard 9-50T—"Tentative Definitions of Terms Used in Powder Metallurgy." The glossary is composed primarily of terms not generally used in the same sense in fields other than Powder metallurgy. A total of 112 terms are defined.

The second standard is designated as M.P.A. Standard 10-50T—"Tentative Standard Tension Test Specimens for Pressed and sintered Metal Powders."

The new standards are available at 25¢ per copy each.

DEVELOPMENTS IN HYDRAULIC DRIVES

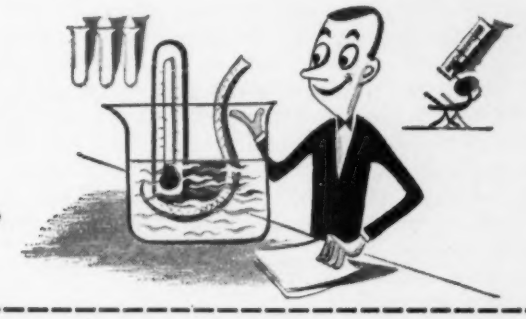
A new issue of "Production Road," featuring the latest developments in hydraulic drives, has been announced by the Twin Disc Clutch Company, Racine, Wisconsin. The history of hydraulic power transmission is briefly traced, followed by a profusely illustrated series of applications of the newest Twin Disc hydraulic drives — the Hydro-Sheave, the Hydro-Wynd, and the Model HUD Disconnecting Coupling. The magazine is available on request from the Twin Disc Clutch Company, Racine, Wisconsin.

(*Please turn to page 296*)

For 3500 years,
ramie fiber resisted rot
in an Egyptian tomb...



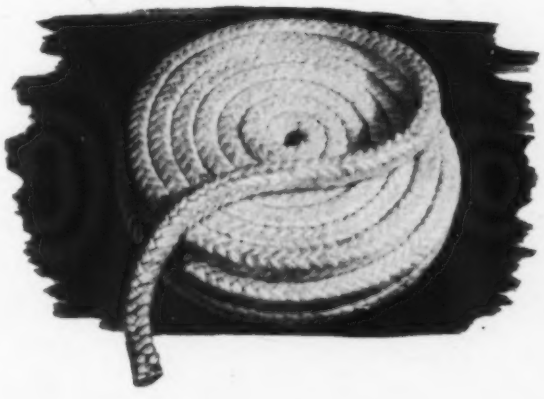
Now...Johns-Manville makes ramie fiber into the rot-resistant packing...



That's why NAVALON stands up where other packings fail!

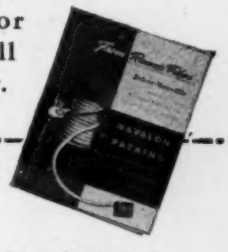
IN PLANT AFTER PLANT, this new Johns-Manville packing made from ramie fiber is establishing new records in reciprocating service against fresh or salt water, brine, cold oil and many other liquids.

Navalon's rot-resistant properties are only one reason for these outstanding performance records. Navalon also has the high tensile strength inherent in ramie, nature's strongest fiber. An exclusive Johns-Manville process of manufacture gives it unusual lubricating properties, too—another reason for its ability to outlast other cold liquid service packings. And, in addition, Navalon is free from any tendency to score.



In the toughest service, users are finding that this unique combination of properties not only means less repacking—it means less wear on rods and plungers as well—money-saving performance all around.

Why not investigate Navalon as a means of increasing packing life and reducing costs in your plant? Get in touch with your packing distributor, or send for folder PK-32A that tells the full story. Just fill in the coupon below.



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PACKINGS & GASKETS

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Please send me your folder on Navalon Packing (PK-32A).

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Company_____

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City_____ State_____

(PUR-10)

BUSINESS IN MOTION

To our Colleagues in American Business . .

Temper or hardness is one of the important physical characteristics of a metal, because it affects both manufacturing processes, and the service given by the finished product. Manufacturers are generally aware of this fact, and the more complicated the piece and the fabrication methods, the more attention is paid to temper and annealing. However, it is often the case that an apparently simple part may require equally thorough consideration. Such was the case with an electric soldering "gun," which uses a ⅜-inch copper rod as the secondary of the transformer and a smaller rod for the tip. It is necessary for the rod to be sufficiently rigid, yet at the same time it must be soft enough so that during fabrication, involving shearing, coining and bending, the metal will not break, split or crack. A certain temper of rod was tried, and became twisted during fabrication, which made it difficult to assemble and interfered in other ways with the manufacture and use of the device. The cure turned out to be a slightly harder temper, hard enough to prevent the twist, but not hard enough to result in fractures during fabrication. Proper temper was the key to a perfect job, not only for the transformer secondary, but also for the soldering tip itself, which likewise has to be coined, punched, and formed.



Says the manufacturer: "In addition to being extremely helpful in arriving at the proper tempers, Revere also recommended that we specify our rod in multiple lengths, and thus save considerable on scrap. They were also helpful in solving the problem of attaching the brass sleeve to the secondary rod." The users of the soldering gun of course have no idea of the amount of testing and investigation that was necessary in order to make the device practical and advantageous for them. This is true of practically every product, whether it be a super-accurate laboratory balance for which Revere may supply metals, this soldering gun, or an automobile which may contain many pounds of Revere Copper, Brass and Bronze to assure long service.

The point of this story is that Revere's interest in your problems by no means ends with the receipt of an order. It may well precede the order, and be maintained through very practical cooperation until you, as well as we, are convinced that the requirements of manufacture and use have been met to the maximum degree. This practice of cooperation between suppliers and manufacturers is rather common throughout industry. The paper mill and package maker will gladly work out with you the best material for your packages, for example. If you buy chemicals, the chemists may come up with something better or cheaper for your purposes, or suggest an advantageous shift in processing. There are many different types of rubber and rubber-like substances, and of glass, wood, plastics. You cannot be expected to know all about everything you buy, nor is it necessary. Simply permit your suppliers to work out with you, in full knowledge of your problems, the specification and fabrication of the material best suited for your needs. No matter what you make nor from whom you buy, the opportunity to benefit by the knowledge of your suppliers is always open to you.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

☆ ☆ ☆

Executive Offices:

230 Park Avenue, New York 17, N. Y.

NEW LIFE FOR OLD WATER WELLS

Information on the cleaning of water wells with Calgon, giving new life to old water wells, is available from Calgon, Inc., Pittsburgh, Pa. The method is said to remove accumulations of clay and fine silt (which are not affected by acid cleaning) as well as deposits of iron oxide and calcium carbonate. Calgon is non-corrosive to either metal or concrete during the short contact periods required, and a well that has lost capacity because of plugging or clogging can be cleaned without removal of equipment, it is said.

✓ ✓ ✓

PRICES PAID BY BUYERS 70 YEARS AGO

In the course of a talk at a Graphic Arts Luncheon Meeting in Washington recently, R. M. Brennan, Purchasing and Contracting Officer, District of Columbia, reviewed some of the prices in supply contracts entered into by the first Board of Commissioners of the District, seventy years ago.

"The prices the District paid in those days were fantastic", he said: "No. 4 white envelopes cost $1.25 a thousand; Carter's ink, 50¢ a quart, paper, legal cap, 14 lbs., ruled, $2.75 per ream; slate pencils $0.14 a box; official envelopes were printed for $0.70 a thousand; feather dusters cost $3.75 a dozen; pig lead, $.0.04½ a lb.; horse shoe nails, best, $0.12 a lb.; wheelbarrows, oak, railroad, $1.57 each; sheet zinc; $0.05⅞ a lb.; cotton sheeting $0.15 a yd.; pillow slips $0.15 each; towels $2.50 a dozen; children's shoes, $0.65 a pair; men's shoes, brogans, $0.75 a pair; rubber boots, $2.25 a pair; bi-carbonate of soda cost $0.05 a lb.; turpentine, refined, $0.45 a gallon; cedar posts, 8′ long, $0.20 each; corn meal, $0.01 a lb.; fresh meats for the Washington Asylum, first quality, $0.04½ per lb.; smoked ham $0.06 a lb.; and bacon sliced, $0.04½ a lb. A lamp post weighing 280 lbs., including one coat of red lead paint cost $5.85 each; Cumberland coal $2.88 a ton. Natural ice from Kennebec River in Maine, brought down the coast and then up the bay and the Potomac River to Washington cost 32¢ per hundred pounds."

Commenting on purchasing problems of today, he said, "The District is experiencing very keen competition for purchase orders in practically every commodity field. Not a day goes by that we do not receive requests from prospective bidders throughout the United States that they be included in our bidder's lists. We make every effort to pre-qualify new sources of supply by the use of what we call a "Qualification Questionnaire." In some cases we have received as many as 25 or 30 bids on one schedule. This is a sign of a very healthy competition and an excellent example of free enterprise in action. Th relationship between the buyer and the seller is once again on a normal basis, so far as most commodities are concerned.

(*Please turn to page* 300)



Soda Ash • Caustic Soda • Caustic Potash • Chlorine • Potassium Carbonate • Calcium Chloride • Sodium Bicarbonate • Specialty Cleansers • Sodium Nitrite
Nytron • Ammonium Bicarbonate • Para-dichlorobenzene • Ortho-dichlorobenzene • Monochlorobenzene • Methanol • Ammonium Chloride • Formaldehyde



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use a "Special"

Whenever a bolting job comes along where the use of a standard fastener is uneconomical or impracticable, or both, use a "Special"—a fastener designed especially for the job.

Bethlehem's Lebanon, Pa., Plant specializes in the manufacture of "Specials." With their years of experience in producing fasteners tailored to unusual requirements, Lebanon Plant engineers can often improve on existing designs or come up with something entirely new—with resultant savings and other benefit to the user.

We've never yet seen a fastener too difficult or unusual for Lebanon Plant to manufacture. Thin or fat . . . long or short . . . curved or unsymmetrical heads . . . we make them all. And of course we make in addition a complete line of standard bolts and nuts.

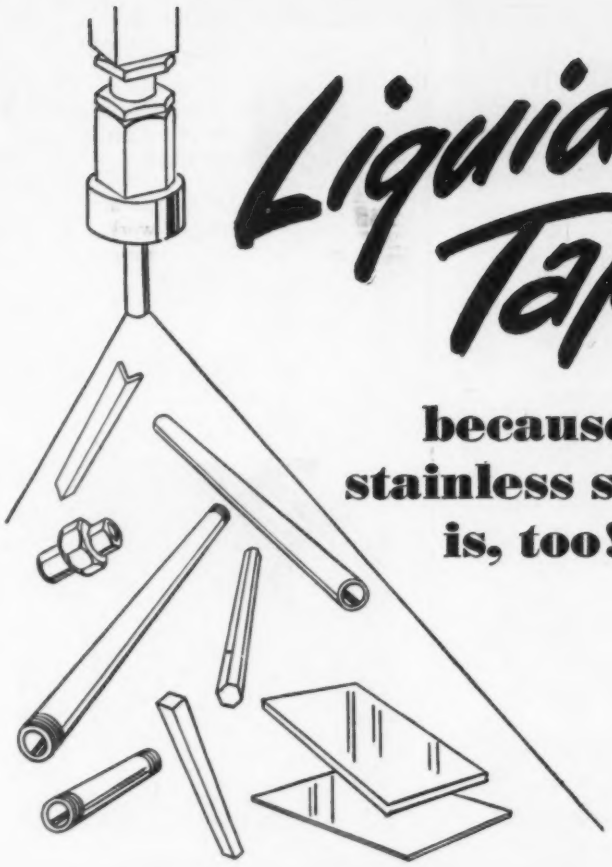
If you have a fastener problem, perhaps we can help you find the answer to it. Write to us or get us on the phone. We'll be glad to have a representative call at your plant or office, at any time you say.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

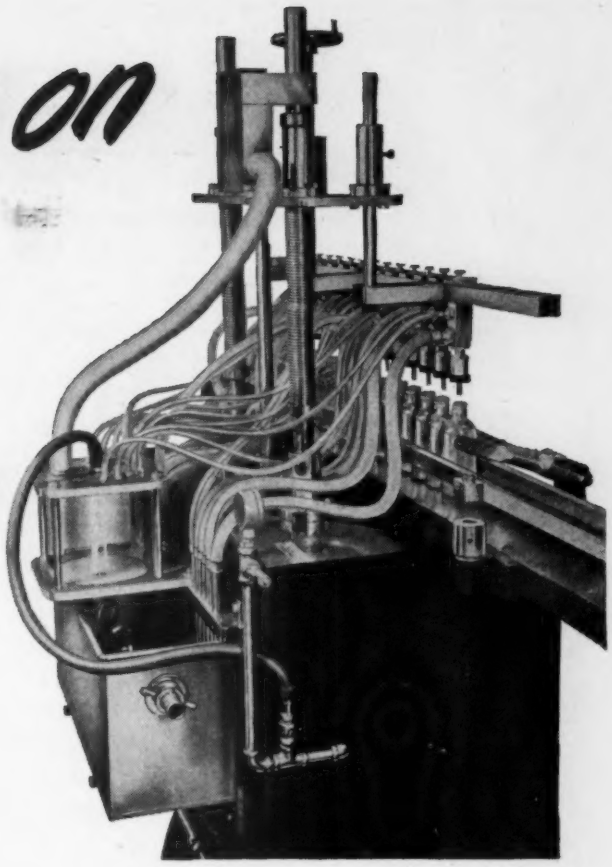
★ BETHLEHEM STEEL ★

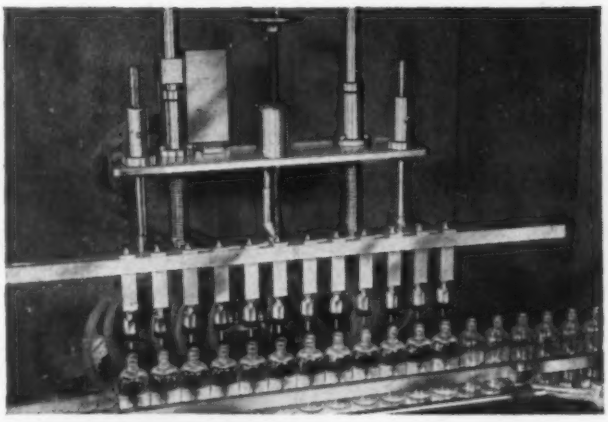
Bethlehem supplies every type of Fastener



Liquids on Tap

because stainless steel is, too!





Chemical, cosmetic, and other manufacturers are now using this ingenious, all-stainless filling machine for high speed precision packaging of their liquid products.

It fills containers with any type of fluid—free flowing, viscous, or foaming—through a battery of automatic valves actuated by a single foot pedal operation.

The nature of each liquid to be filled requires that every machine be custom built, normally a headache in materials procurement. The illustrated machine, for instance, uses stainless steel nipples, unions, plates, sheets, angles, rounds, flats, squares, hexes, screws, nuts, seamless tube, and pipe.

The manufacturer of this unit, however, has simplified his problem by standardizing on stainless steels from Frasse warehouse . . . and by relying for selection of the correct types on Frasse engineering service. In just the quantities and exactly the analyses needed, he gets his requirements immediately from Frasse stocks.

You're invited, too, to make Frasse your inventory headquarters for stainless steel. Frasse stainless stocks include every rolled form . . . sheets, strip, bars, tubes, pipe, and specialties . . . in a wide range of sizes and analyses. *For immediate stainless service, call Peter A. FRASSE and Co., Inc., 17 Grand St., New York 13, N.Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange St., Buffalo 3, N.Y. (Washington 2000) • 157 Richmond Ave., Syracuse 4, N.Y. (Syracuse 3-4123) • Jersey City • Hartford • Rochester • Baltimore*

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A new Frasse Engineering Memorandum on the "Resistance to Sensitization of Extra Low Carbon Stainless Steels" is now available. Shows results of comparative tests on types 302, 304, 316, 321, 347, and 304 ELC for corrosion immunity after welding. Send the coupon for your free copy, today.

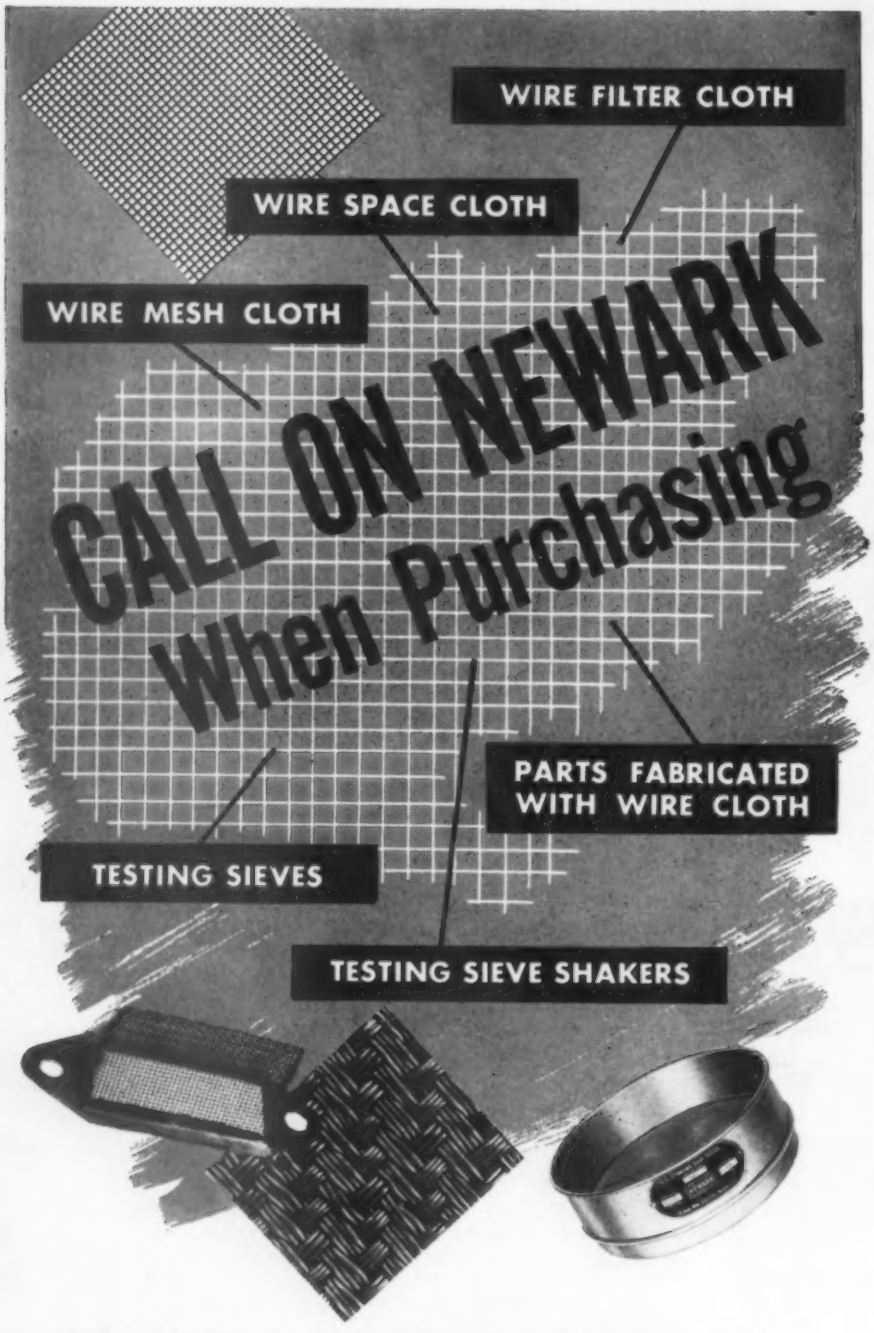
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INDUSTRIAL MONKEY REACHES HARD TO GET-AT HEIGHTS

Illustration shows the "Industrial Monkey" marketed by Capital Industries, Inc., Portland, Ore., designed for easy access to hard to get-at heights. It consists of an extendable steel boom mounted on any 1½ ton or larger truck. On the work end of the boom is a rail-protected, automatically self-leveling work platform insulated to protect against 8000 volts. Sixteen feet long closed, the boom extends to 26 feet and is mounted on the truck at a point approximately 6½ ft. above the ground. The worker may work safely and comfortable at heights up to 40 feet.



Hydraulic in operation, the boom is controlled by the worker on the platform by an arrangement of foot buttons. It may also be operated from the truck cab. Power is obtained from power take-off of the truck transmission. The boom is rated to carry a 200 pound man at any position with a 4 to 1 safety factor. At certain positions it will carry a 1200 pound load with the same safety factor.

Other specifications of the machine are as follows: Weight, 2500 pounds; road clearance, traveling position, 10½ feet, swing, 270 degree arc around turntable.

NEW CIRCULAR ON NICKEL AND ITS ALLOYS

A new circular entitled *Nickel and Its Alloys*, just published by the National Bureau of Standards and available from the U. S. Government Printing Office, is a systematic and readily accessible summary of information about nickel. This circular combines information obtained by the Bureau in its own investigations with that available in published records of work done elsewhere. Particular attention is given to the physical and mechanical properties of nickel and its ferrous and nonferrous applications.

Information on nickel in this publication includes sources; extraction, recovery, and refining processes; metallography; chemical properties; physical properties; mechanical properties at different temperatures; and casting, fabrication, and miscellaneous processes. Many ferrous and nonferrous alloys are listed, and their properties such as density, thermal conductivity, tensile strength,

(*Please turn to page* 302)



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For speed and convenience, order this famous N-B-M Bronze from conveniently located stocks. 13" lengths in all popular sizes...choice of machined or as cast cored and solids, or as cast hexagons.

Here is important news for every user of Bronze Bar Stock—delivery of the outstanding bronze alloy—N-B-M "Tiger" Bronze—*in the type of bar you want, when you want it.*

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If you want longer, lower-cost bearing service for your plant or product, try "Tiger" Bronze on your next order! Write for quotations.



Be sure to ask for this new, free booklet . . . It's packed with helpful information: *describes* characteristics . . . *lists* all stock sizes . . . *illustrates* the 6 bar types available. Free copy will be sent by return mail.

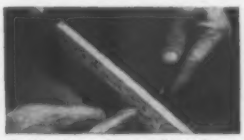
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Tufts hand stitched into block cannot become loose.



Handle is easily adjustable to height of sweeper.



Steel bolt in handle prevents thread wear.



Long tufts give longer wear.

See Why

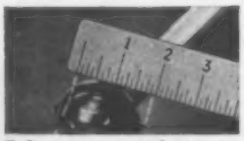
Speed Sweep

Is American Industry's No.1 Sweeping Tool

The brush with the steel back



Steel back prevents splitting and chipping of block.



Tuft arrangement in narrow block provides "spring and snap."

MD

MILWAUKEE DUSTLESS BRUSH CO.

530 N. 22nd Street • Milwaukee 3, Wis.

(*Continued from page* 300)

magnetic properties, and corrosion resistance are discussed. The text is adequately illustrated with curves and tables.

National Bureau of Standards Circular 485, *Nickel and Its Alloys,* 72 large double-column pages, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 50 cents a copy. Remittances from foreign countries should be in United States exchange and should include an additional sum of one-third the publication price to cover the cost of mailing.

NEW SILICONE INSULATED A-C WELDER ANNOUNCED BY G. E.



A new silicone-insulated, portable, a-c welder known as the 6WK20H series has been announced by the Welding Divisions of General Electric's Apparatus Department. The 6WK20H series are part of the only standard a-c welder line commercially available incorporating silicone insulation. A high margin of safety and operating dependability is provided by this insulation since it is unaffected by high temperatures and is water repellent.

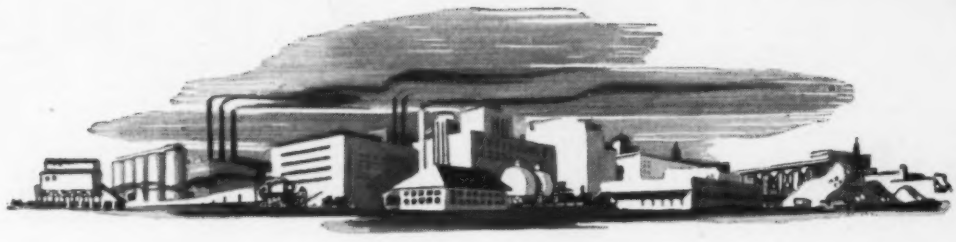
Compact construction—12 inches by 17 inches in cross section, and 23 inches in height—permits its utilization of underbench and balcony space not available to larger welding units. Practically averaging one-half pound per ampere of maximum output the 6WK20H weighs 154 pounds and has a current range from 30 to 250 amps, and accommodates electrodes from 1/16 to 3/16 inch diameter. Due to the compactness and balanced design a man can readily lift it and put it in the trunk of his car for transporting.

Coils of the welder are impregnated with Class H insulation, characterized by the use of asbestos, glass, and mica, impregnated by synthetic high temperature resisting resins known as silicones. Silicones are unique in retaining mechanical and electrical strength at temperatures where ordinary varnishes char and disintegrate. The welder windings have been rated at the conservative

(*Please turn to page* 304)



How to spend $391.25 once and *Save $2160 Every Year!*



This is the actual experience of a Harrisburg Pa. firm* that stopped the kind of profit loss which may be hidden in YOUR plant, too!

In a material handling survey, lubricating of machines came in for its share of attention. The head of production called in an Alemite Lubrication Engineer to help him spot possible ways to cut costs. They found a way to lubricate machines that added 30 minutes more production daily. The total investment in Alemite equipment was $391.25! The saving in production time—in addition to a 60% reduction in lubricant used—comes to $2160 a year!

*Name on request

No matter what size or type of plant you operate, Alemite can show you dozens of examples of amazing savings through more efficient handling of petroleum products. These are facts which you can readily confirm in your own time studies. Contact your local Alemite Industrial Distributor now. Or send for free booklet, "11 Ways to Cut Production Costs." Simply attach coupon below to your letterhead. Alemite, Dept. U-100 1850 Diversey Parkway, Chicago 14, Ill.

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1. Methods 2. Lubricants 3. Equipment

Another Product of Stewart-Warner

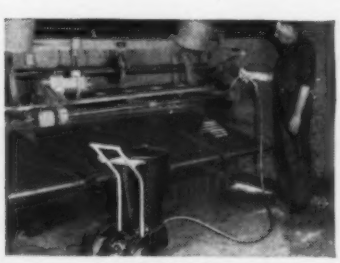
Alemite Cuts Costs 3 Ways



1. ***In Transferring Lubricants...*** by eliminating mess, expensive contamination—and cutting man hours 63% for every 100 pounds of lubricant transferred.



2. ***In Loading Grease Guns . . .*** by saving 3¾ man hours for every 100 pounds of lubricant loaded into hand guns.



3. ***In Applying Lubricants . . .*** by saving up to 23.9 man hours for every 100 pounds of lubricant applied to bearings.



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(simply attach to your letterhead)

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PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

(*Continued from page* 302)

temperature rise of 130C to provide long life. Coils are well ventilated to operate at uniform temperatures without hot spots. Temperature does not creep up, but coils run as cool in the afternoon as in the morning. The welder is not limited to 4 hour operation to avoid overheating.

* * *

STAINLESS STEEL CHEMICAL CONTAINER ANNOUNCED



A new all stainless steel chemical container has been developed by Steel Cooperage Co., Division of Industrial Stamping and Manufacuring Co., 4801 Bellevue Ave., Detroit 7, Michigan.

Made of Armco Type 304 Stainless Steel, the containers are strong, long lasting, easily cleaned, and easy to handle Being stainless they can be used for a wide variety of liquid chemicals, food syrups and flavors, oils and extracts.

Known as the Lee stainless container they have a capacity of 15 gallons yet weigh only 27 pounds. Preliminary tests indicate that, compared with standard acid carboys, the reduced weight and smaller dimensions of the Lee container reduce freight costs. In one case freight savings on a single round trip amounted to 16% of the container cost. They are designed for rough handling by incorporaing the basic features of the Lee beer barrel, proved by long satisfactory use in this rigorous service.

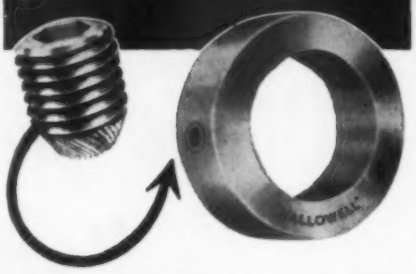
Depressed hand holds in the top chime and their light weight make the containers especially easy to handle. And the chimes are designed for solid but easy stacking with resulant space saving in the warehouse and in shipping. Compared with unstacked 12 gallon carboys, Lee drums, sacked two high and containing the same amount of material, require less than one-third the floor space. The container cap is of a new double construction with wrench fittings, and is chained to the container.

The spherical bottom permits complete drainage, even by siphoning. Owner's name may be stamped on top chime.

(*Please turn to page* 306)

HALLOWELL

Steel Collars



HALLOWELL Solid Steel Collars, functionally proportioned throughout . . . precision-machined so faces run perfectly true . . . are beautifully polished all over . . . yet they cost less than common cast iron collars. 3" bore and smaller are made from Solid Bar Stock. To make sure the collar won't shift on the shaft, they are fitted with the famous UNBRAKO Knurled Point Self-Locking Socket Set Screw—the set screw that won't shake loose when once tightened. HALLOWELL . . . a "buy word" in shaft collars . . . available in a full range of sizes for IMMEDIATE DELIVERY.

Write for name and address of your nearest HALLOWELL and UNBRAKO Industrial Distributors.

See us at Booth 2434, Convention of National Metal Congress and Exposition, Chicago, Oct. 23 to 27

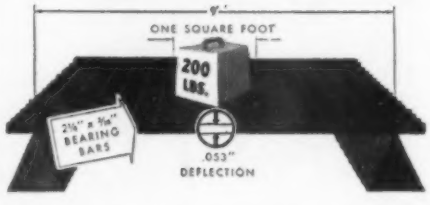
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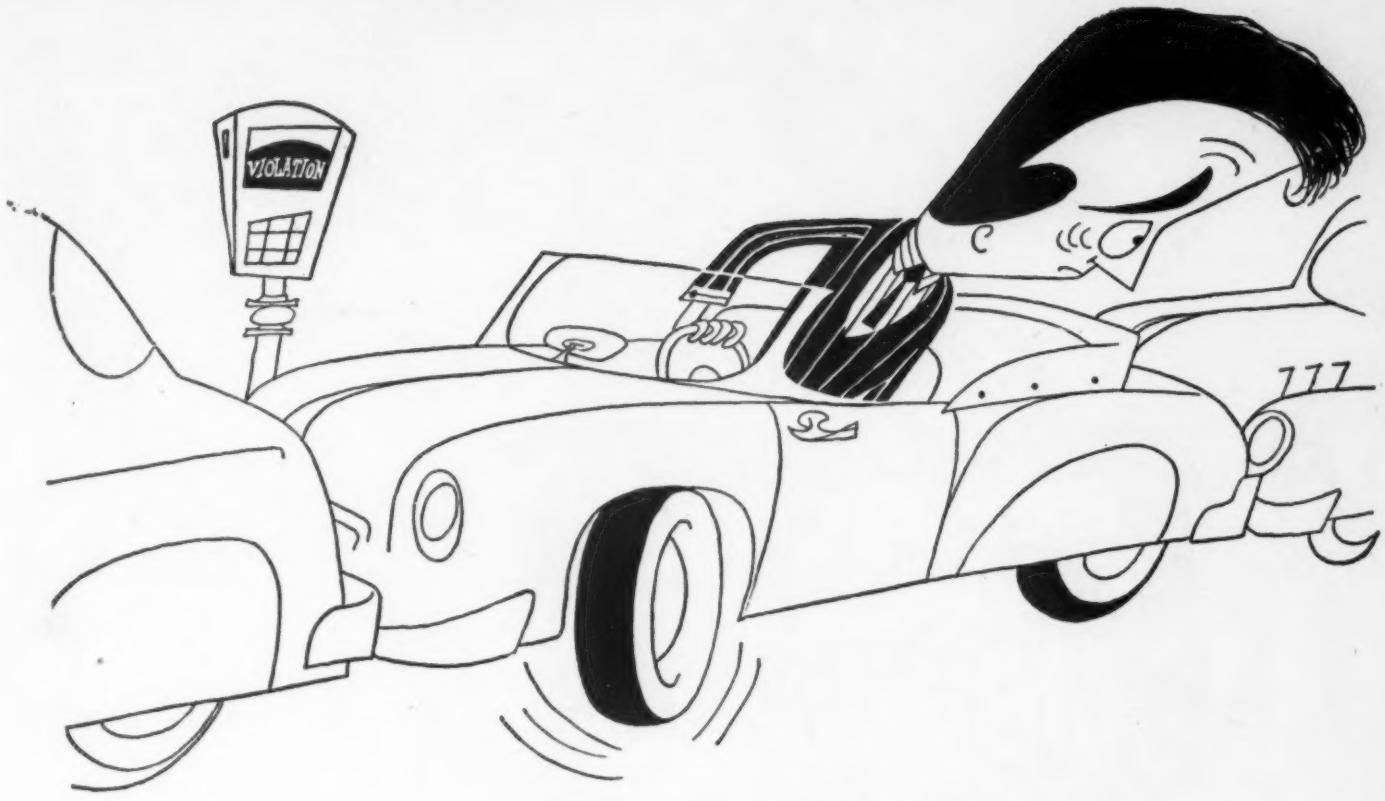
Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KP 1140.

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BIBLIOGRAPHY ON CONTAINER COATINGS ANNOUNCED BY OTS

New bibliographies of industrial interest on "container coatings" and on the "solubility of argon, carbon dioxide, helium and nitrogen in organic liquids" have been announced by the Office of Technical Services of the U. S. Department of Commerce.

The Bibliography on container coatings, prepared by the Army Quartermaster Technical Library in Philadelphia, provides abstracts of some 150 patents and research papers on food and other types of container coatings, published since 1941. Author, inventor and patent indexes are included. Order PB 100 864, 44 pages, $1.25.

The "Biliography on the Solubility of Argon, Carbon Dioxide, Helium, and Nitrogen in Organic Liquids", prepared for the Atomic Energy Commission, provides 137 abstracts from readily accessible literature on these subjects, published since 1934. Information is included relating to experimental techniques used for the determination of the solubility of gases in liquids. In addition to a 10-page subject index, a special reconciliation of the entries with Chemical Abstracts references is provided. Order PB 100 583, 51 pages, 20 cents.

Orders for the bibliographies should be addressed to OTS, Washington 25, D. C., accompanied by check or money order payable to the Treasurer of the United States.

NEW TYPE OF FREIGHT CAR FLOORING



A new type of freight car flooring has been developed by Armco Steel Corporation. Combining the advantages of both steel and wood flooring, it offers lowered cost, greater strength and longer life.

It is a composite steel and wood floor for box cars, gondolas and flat cars, which was designed to meet the requirements imposed by modern loading methods and to reduce costs.

Hat shaped steel ribs, placed across the width of the car and welded to the center sill, stringers, and side sill angles, alternate with wood planks bolted to the rib flanges. The top surfaces of the hat sections form part of the floor. Since they extend slightly above the wood planks, they support most of the load and take the wear and tear of rough service. Steel planks, tack-welded to the

(*Please turn to page* 308)

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Want Additional Product Information? See Page 19.

Completes 300 TV sets— meets daily quota (at a cost of $4.70)



Delicate coils were needed by Midwest manufacturer to complete 300 TV sets . . . and Massachusetts supplier was 920 miles distant! Air Express assured delivery by 8 o'clock next morning, so manufacturer ordered 500 men to report for work. Shipment arrived 7:20 A.M.—production rolled! Shipping cost for 17-lb. carton only $4.70! Manufacturer uses Air Express regularly to keep business in high gear.



$4.70—and special pick-up and delivery included! Low Air Express rates cover door-to-door service. More convenient—easy to use. Just phone for pick-up! (Many low commodity rates in effect. Investigate.)



Air Express goes on all flights of Scheduled Airlines. Shipments keep moving around the clock—speeds up to 5 miles a minute. *Experienced* handling. Phone Air Express Division, Railway Express Agency, for *fast action*.

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Experienced Air Express has handled over 25 million shipments.

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Railway Express Agency and the
SCHEDULED AIRLINES of the U.S.

(*Continued from page* 306)

ribs, are used where it is impossible to bolt wood planking.

Based on a 25 year car life, it is estimated that the overall cost of the Armco freight car flooring will be approximately 45-50% less than conventional wood flooring. Other considerations favoring the new flooring are: (1) better operating economy, (2) adaptability to any kind of lading (3) less damage to lading, and (4) less time in repair shop.

The combination wood and steel floor has all the advantages of both steel and wood flooring. Bulk lading can be mechanically unloaded without damaging the flooring and packaged lading rests on the steel ribs, yet bracing can be nailed to the wood planks.

Especially important is the greater strength of the new flooring compared with either steel plate or wooden plank. It will not sag under concentrated loads as do steel plates and unlike wood flooring will not break under the heavy loads imposed by lift trucks and palletized lading.

PLASTICS INDUSTRY TO PUBLICIZE LABELING PROGRAM

A special appropriation for the promotion of its Informative Labeling Program has been announced by the chairman of the Informative Labeling Committee of the Society of the Plastics Industry, Inc., 295 Madison Ave., New York, N. Y. The chairman of the committee is Elmer French, general sales manager of Firestone Plastics Company.

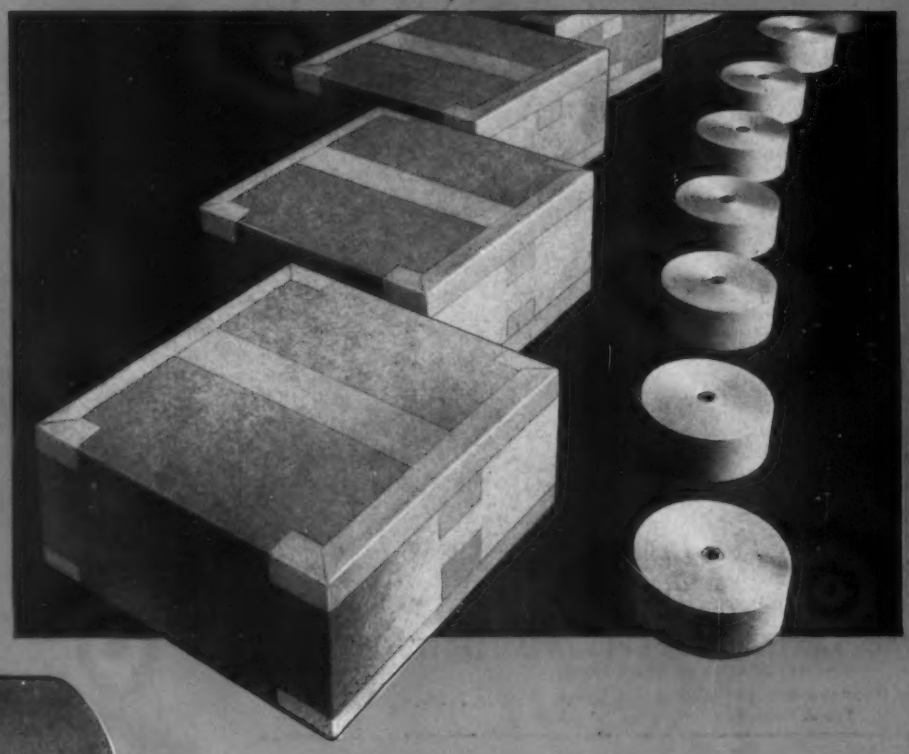
The board of directors of the Society has made available funds to cover the cost of an expanded and intensified program on Informative Labeling. These funds are earmarked for the following purposes: Promotion and Publicity designed to educate the Plastics Industry with regard to Informative Labeling; establishment of a speakers bureau to provide personnel to present talks at plastics industry meetings; printing and distribution of handbook on informative labeling in the plastics industry; preparation of visual presentations for use at expositions and plastics industry meetings. These activities will be carried out by the subcommittee on promotion of informative labeling of which Amos Ruddock, plastics merchandise manager, Dow Chemical Co., Midland, Mich., is chairman.

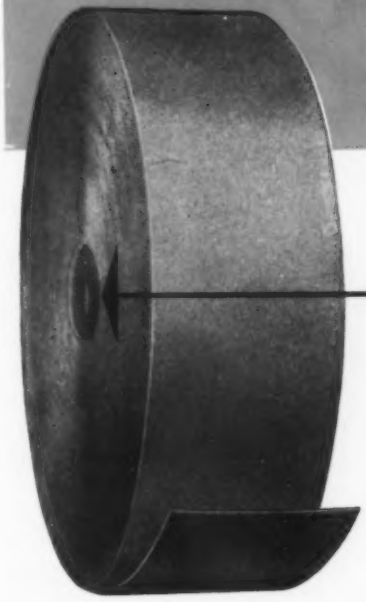
A recent survey showed that more than 50% of the plastic products now being marketed carry labels of some sort. However, only 10% of the labels in current use were classed as "truly informative labels", the bulk being of the identification type usually serving to do no more than to supply the brand name of the plastic used.

The ultimate goal is an industry-wide informative labeling program that would see plastic products identified not only by brand but on a basis of performance, composition, and construction. Accord-

(*Please turn to page* 310)

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*another reason why

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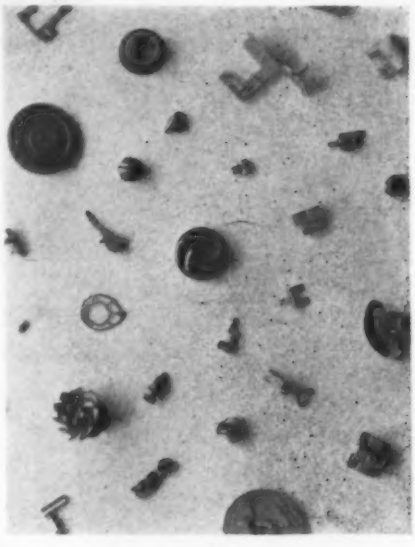
(*Continued from page* 308)

ing to the SPI informative committee, the effective informative label should cover six points: (1) the product name — what it is; (2) performance — what it will do; (3) composition — what it is made of; (4) construction — how it is made; (5) limitations — how to take care of it; (6) guarantee — if desired.

PRECISION TURNING CUTS COSTS ON CARBURETOR PARTS

Using a small precision bench lathe the F. J. Kester Company, Edwardsburg, Michigan, has solved the problem of economically producing aircraft carburetor parts to exacting specifications.

One of the parts was a control link made from 24ST4 rectangular aluminum bar stock ½" x 9/16" x 4¾". The center had to be reduced to 5/16" diameter, with a surface smoothness of 100 microinches rms or better. Usual procedure would have been to first machine the part in a lathe, then finish by grinding to obtain the required surface smoothness. It was obvious that a considerable saving could be made if the grinding operation could be eliminated.



Aircraft carburetor control link in various stages of production

A 9" swing South Bend Precision Bench Lathe was tooled up for the job. Longitudinal feed stops were used to locate both ends of the cut. A cross-feed stop was used to position the cutting tool for the diameter. Two high speed steel combination forming and turning tools mounted in a square turret tool block performed all forming, rough turning, and finish turning operations. The work piece is driven by a 4-jaw independent chuck and supported in the tailstock by a special revolving center. A simple adapter in the 4-jaw chuck permits inserting and removing the work by opening only one chuck jaw, so no re-centering is required.

With a little experimentation, the correct spindle speeds and feeds were es-

(*Please turn to page* 312)



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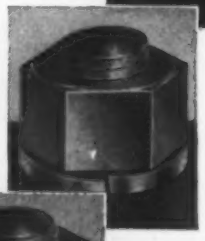
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TIGHT *in service*



TIGHT *after long service*



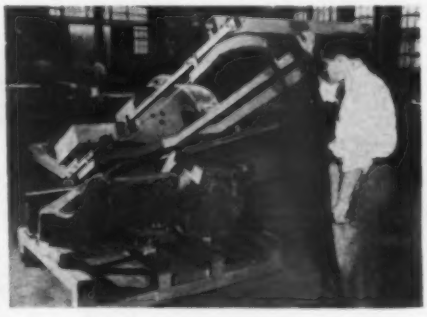
(*Continued from page* 310)

tablished, and the most satisfactory clearance and rake angles for the cutting tools determined. The results were surprising. The specified surface smoothness of 100 microinches rms was easily surpassed. An average finish of 30 microinches rms is now being maintained on a production basis, taking one roughing and one finishing cut over the center section of the piece.

DEVELOP SAW FOR CUTTING UP OBSOLETE DROP HAMMER DIES

The problem of melting obsolete drop hammer dies too large to go in a furnace, has been solved at The Glenn L. Martin Company through the use of a saw developed by Jay M. Boyd, Jr.

The saw, designed on the principle of a band saw, will cut large dies into pieces. Dies weighing approximately five tons each have been sawed in two in 55 minutes by the new saw, which will cut any type of die—steel, zemak or lead.



Saw has just been raised after cutting die in half

Only one person is required to operate the saw, no skill is needed, and there is no danger to the operator. The saw has a counter-balance, and is built on the principle of a see-saw. It is not only easy to operate but easy to move around.

Before the development of this saw, dies which were too large to go in the furnace were sometimes burned in half, and sometimes sheared in half on a hydraulic press. It took from six to eight hours to burn one of these large dies in half, and shearing took four hours.

The use of the new saw also saves the time required to transport a die to and from the hydro-press, and saves wear and tear on the hydraulic press.

CHEAP BANDING DEVICE CUTS MAN-HOUR REQUIREMENTS ONE-THIRD

A $4.25 banding device which cuts man-hour requirements by one third and saves $1040 annually, is being used at the Seattle Port of Embarkation for banding boxes, trunks and footlockers. Developed by a Port employee, the square stool-like device moves on roller wheels and has intersecting slots on its surface which allow the banding metal to be slipped around a small item. Further information is available from the Office of Public Information, Technical News Letter, Room 2C-729, The Pentagon, Washington, D. C.

Is YOUR Supplier of Zinc Die Castings On This List?

A & A Die Cast and Plastic Molds Co., West Los Angeles, Calif.
The Accurate Die Casting Co., Cleveland, Ohio
Advance Pressure Castings, Inc., Brooklyn, N. Y.
Advance Tool & Die Casting Co., Milwaukee, Wis.

Badger Die Casting Co., Milwaukee, Wis.

Central Die Casting & Mfg. Co., Inc., Chicago, Ill.
Cleveland Hardware & Forging Co., Cleveland, Ohio
Congress Drives Division, Tann Corp., Detroit, Mich.
Continental Die Casting Corp., Detroit, Mich.
Division of F. L. Jacobs Co.
Crown City Die Casting Co., Pasadena, Calif.

Doehler-Jarvis Corp., Pottstown, Penna.
Doehler-Jarvis Corp., Toledo, Ohio
Doehler-Jarvis Corp., Chicago, Ill.
Dollin Corporation, Irvington, N. J.
Du-Wel Metal Products, Inc., Bangor, Mich.

Fanarc Manufacturing Co., Inc., Whittier, Calif.
Federal Die Casting Co., Chicago, Ill.

Glenvale Products Corporation, Detroit, Mich.
Globe Imperial Corporation, Rockford, Ill.
C. M. Grey Mfg. Co., East Orange, N. J.

Heick Die Casting Corporation, Chicago, Ill.
Hilfinger Corporation, Toledo, Ohio
The Hoover Company, North Canton, Ohio

Kamin Die Casting & Mfg. Co., Chicago, Ill.
Kiowa Corporation, Marshalltown, Iowa
Paul Krone Die Casting Co., Chicago, Ill.

Madison-Kipp Corporation, Madison, Wis.
Milwaukee Die Casting Co., Milwaukee, Wis.
Modern Die Casting Corp., Chicago, Ill.
Monarch Aluminum Mfg. Co., Cleveland, Ohio
Mt. Vernon Die Casting Corp., Mt. Bernon, N. Y.

New Products Corp., Benton Harbor, Mich.

Paragon Die Casting Co., Chicago, Ill.
Parker White Metal Co., Erie, Penna.
Precision Castings Co., Inc., Syracuse, N. Y.
Precision Castings Co., Inc., Cleveland, Ohio
Precision Castings Co., Inc., Reed Metal Crafts Division, Chicago, Ill.
Pressure Castings, Inc., Cleveland, Ohio

Racine Die Casting Co., Racine, Wis.

St. Louis Die Casting Corp., St. Louis, Mo.
Schultz Die Casting Co., Toledo, Ohio
Sterling Die Casting Co., Inc., Brooklyn, N. Y.
Stewart Die Casting Div. of Stewart Warner Corp., Bridgeport, Conn.
Stewart Die Casting Division of Stewart Warner Corp., Chicago, Ill.
Stroh Die Moulded Casting Co., Milwaukee, Wis.
Superior Die Casting Co., The, Cleveland, O.

The Tool-Die Engineering Co., Cleveland, Ohio
Twin City Die Casting Co., Minneapolis, Minn.

Union Die Casting Co., Ltd., Los Angeles, Calif.
Universal Die Casting Co., Los Angeles, Calif.

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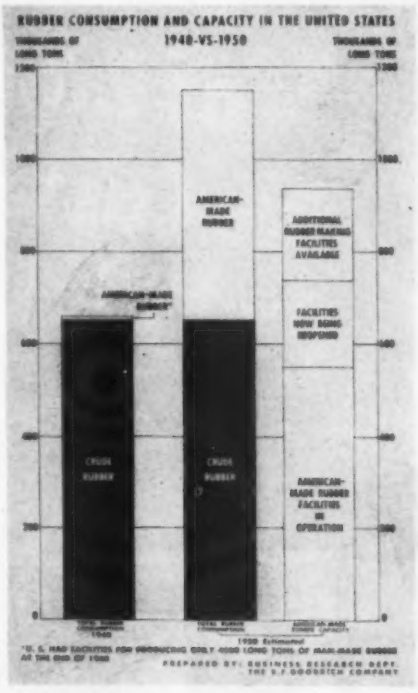
CUSTOM BUILT CENTRALINE SPECIALTY PAPERS

REG. U. S. PAT. OFF.

CHART SHOWS NATION'S RUBBER SUPPLY POSITION

The nation's present rubber supply position compared with 1940 is illustrated in the chart prepared by The B. F. Goodrich Company.

In 1940 the United States consumed 650,000 tons of rubber, 97 per cent of which was imported from the Far East. There was then in existence in this country capacity to produce only 4500 tons of man-made rubber of all types.



Today the nation is consuming rubber at a rate of more than a million tons a year but has facilities for producing 940,000 tons of American rubber. Output of man-made rubber will be at the rate of 740,000 tons early in 1951.

During the latter months of World War II America turned out man-made rubber at a rate of a million tons a year.

* * *

SEAMLESS ALUMINUM CABLE SHEATHING

A method for applying a seamless sheathing of aluminum to telephone and electric power cables has been developed by Aluminum Company of America. This new method, for which patent application has been made, involves the principle of cold reduction, or swaging (as by a tube reducer).

Seamless aluminum sheathing for cable is thinner, stronger and lighter in weight than the usual lead sheathing. These advantages are in part because aluminum has about one-fourth the density of lead, and in part because aluminum, with its higher yield and tensile strength, can be applied in approximately one-half the thickness required of lead. Consequently, one foot of the new sheathing weighs about one-eighth as much as an identical length of lead sheathing. Significantly, the product developed by Alcoa is softer

(*Please turn to page* 316)

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It's easy to see how *less tool grinding* means less machine down time. And it saves because you make fewer tools. *Reducing the number of rejects* on Stainless jobs—getting the best possible finishes—can make a big difference in your unit production rate, too.

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For example, the men who work out of your nearby Carpenter Mill-Branch Warehouse will be glad to help out on any problems that come up. Or, we can give you a personal copy of the Carpenter "NOTEBOOK on Machining Stainless Steels". It's packed full of useful shop hints on turning, drilling, threading, milling, lubrication, etc. If you would like a copy, just write us a note on your company letterhead, indicating your title.

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CITY_____ STATE_____

(*Continued from page* 314)

and more flexible than similar aluminum sheathing produced heretofore.

Substantial lengths of this seamless aluminum sheathing are now being tested by a number of cable manufacturers. About 3500 feet were used in the telephone system of Alcoa's new reduction works at Point Comfort, Calhoun County, Texas.

G-E ACA MOTOR NOW AVAILABLE WITH PRESET SPEED DEVICE

The General Electric ACA motor (a-c adjustable-speed) is now available with a mechanical follow-up control for achieving a fixed preset speed without the use of expensive control equipment, it was announced recently by the G-E Small and Medium Motor Divisions.

According to the company's engineers, the new device enables a predetermined speed to be set manually by a knob either directly on the ACA motor or at the end of a flexible cable 10 or 15 ft. away. The speed adjustment can be made while the motor is at a standstill or while it is running.



Predetermined speed can be set manually. A pilot motor, mounted atop the ACA motor, automatically drives the ACA motor brushes to a setting corresponding to the speed set on the adjustment knob.

Speed control of the ACA motor, the engineers explained, is obtained by rotating brushes around the commutator. Since speed is a function of brush position, any device that will automatically bring the brushes to an adjustable predetermined position on successive starts will serve the desired purpose of establishing preset speed operation. This is now compactly and conveniently provided in the present speed device, they said.

In operation, the new mechanism actuates a pilot motor which drives the brushes to a position corresponding to the setting of the speed adjustment knob. A stop or automatic slow-down returns the brushes to the lowest speed position without disturbing the original setting. When the ACA motor is restarted, the brushes again come back to the preselected speed without any attention from the operator. Accelerating time is dependent upon pilot motor speed.

STANDARDS and SPECIALS by the Millions

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Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.





"LO-CARBS"

Made of AISI C-1018 steel — bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.





FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.





"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

* ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.





* CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

* SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.





FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.



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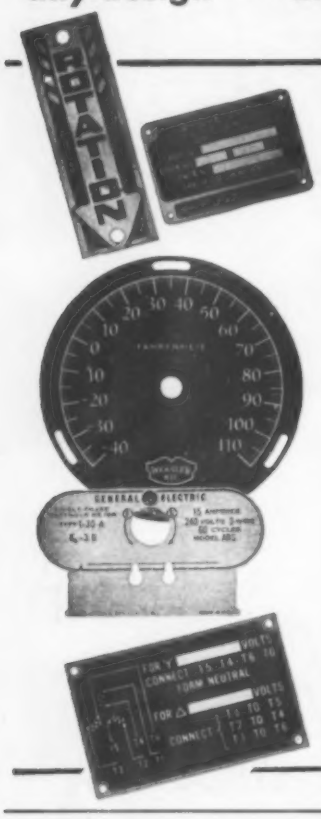
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-- it is economical.
-- cartons can be re-used if necessary.



Purchasing Packaging By The Mile

(*Continued from page* 85)

fore possible to use a wrap-around protection of creped or single-face corrugated material, or even a paper bag in place of a box. The possible saving on this one item alone would amount to over $750,000 a year, and open the door to other similar reductions."

Boxes or drums received at GE plants are examined with the idea of utilizing them for reshipment of other products, Mr. Simmons stated, and vendors are also contacted to determine if their packaging can be made to conform with finished GE products, so that they can, in turn, be used when shipped to GE customers.

Teamwork for Right Decisions

Describing how GE tackles its packaging and shipping problems, F. G. Moloney of the Manufacturing Policy Division emphasized the make-up of the "packaging team", which includes men from product design, engineering, purchasing and traffic, materials handling, production, manufacturing, the work force, suppliers, and customers.

Objective of the program, he said, is to obtain the best possible value for the company and its customers. It includes consideration of over-packaging as well as under-packaging. A packaging laboratory equipped with standard testing devices is maintained, while the tremendous volume of interplant shipments provides a further effective means of checking the adequacy or inadequacy of the packaging. Vendor's packaging is also being evaluated, with the help of the purchasing department, a practice which has opened up a vast area of cost reduction which GE will continue to tap.

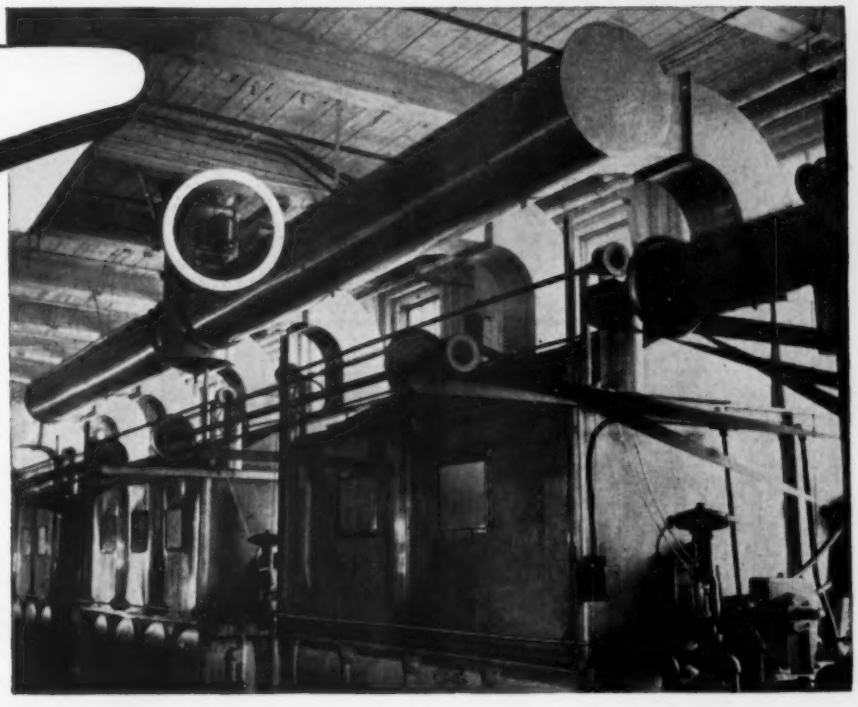
The company is striving for more standardization of design in repetitive mass produced products, so that more use can be made of mechanical packaging equipment. This, Mr. Moloney declared, is an area that presents a tremendous potential for cost reduction and saving, but in which much still remains to be done. He suggested that specialists in mechanical packaging equipment should study the complete electrical field, where he believes many materials now being packed manually could be adapted to mechanical packing.

(*Please turn to page* 320)

From the simplest installation



to the most complicated



HARTZELL FANS AND BLOWERS

move more air . . . cost less per year

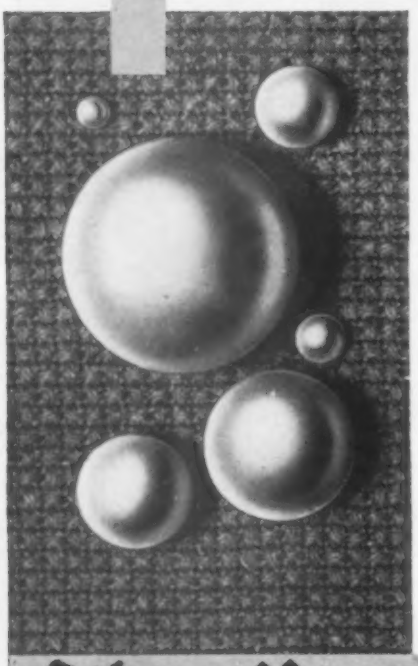
Get a price from your nearby Hartzell representative on the fans and blowers you need. You'll find costs are reasonable. You'll discover two things more, too, following your purchase. One, that power cost per cubic foot of air moved is at the lowest possible level. Two, that maintenance costs remain at a low level year after year. Yes, initial cost is important, but ***be sure you get low annual cost,*** too. A fifty-dollar initial saving can be eaten up in one year of operation of one fan. Hartzell air-moving equipment is economical to buy ***and to operate***. Your Hartzell representative can prove it. If you don't know him, sign and mail the coupon at right.

*Send Information*_____
*Name*_____
*Company*_____
*Street & No.*_____
*City & State*_____

HARTZELL
PROPELLER FAN CO.
PIQUA DIV. OF CASTLE HILLS CORP. DEPT. D **OHIO**

PROPELLER-TYPE FANS AND BLOWERS—ROOF VENTILATORS—UNIT HEATERS • ENGINEERING OFFICES IN PRINCIPAL CITIES

IN Size and Spherical Accuracy
Perfection of Surface
Uniformity—Dependable Physical Quality



NOT A BETTER BALL MADE..

And the service results from every Strom metal ball prove it—not only in the finest precision ball bearings but also in the lot of other ball applications where Strom balls are doing the job better.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

Strom STEEL BALL CO.
1850 So. 54th Ave., Cicero 50, Illinois
Largest Independent and Exclusive Metal Ball Manufacturer

...Cheaper Floor Waxes
COST More MONEY!

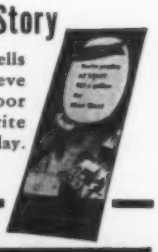


It's not what you pay for the wax that runs up floor maintenance costs—waxing labor accounts for 90% of those costs! That's why cheap wax, requiring frequent re-waxing, is really the most expensive. The finest wax—SUPER-SWIFTSHEEN—cuts cost by lasting 2 to 3 times as long, saving from 1/2 to 2/3 of the cost of *waxing labor.*

SUPER-SWIFTSHEEN is a premium floor wax, yet costs no more than regular first quality waxes.

Write for The Whole Story

This new folder tells how you can achieve big savings in floor maintenance. Write for a free copy today.



The GERSON-STEWART Corp.
LISBON ROAD · CLEVELAND, OHIO

Purchasing Packaging By The Mile

(*Continued from page* 318)

GE is giving much thought and attention to palletizing, and is palletizing outgoing shipments, wherever possible, to its other plants, warehouses, and customers. This program has been somewhat retarded, he said, due to lack of suitable materials handling equipment by some carriers and at some warehouses and transfer points. While the National Industrial Traffic League has been working to get special dunnage rates on pallets, progress has been slow due to the diversified sizes of pallets and requirements of shippers.

Do Purchasing Agents Believe in Santa Claus?

(*Continued from page* 82)

we make it a point each Christmas to remind our own people of this policy."

Buyers' Policy Is Known

City P. A.: "Over a period of 20 years we have established a policy without ever having put anything actually in writing or in direct statements to our suppliers. They know that the buyers in this office do not look kindly upon the receipt of gifts that would be questionable as to intent. Our suppliers know our feeling and do not put us in the position of trying to determine whether the offering at Christmas is a gift or a bribe."

Massachusetts: "Our vendors know the character of the men identified with purchasing in this company. With but very rare exceptions, gifts are within the bounds of good taste."

Ohio: "We do not forbid acceptance of any and all holiday remembrances, nor do we send a notice to that effect to our suppliers. Our suppliers have shown restraint and conservatism, and gifts are neither expensive nor excessive."

New Jersey: "Some suppliers are persistent, and send holiday tokens and gifts anyway. If they did not send them to the office, they would send them to the homes. That is the one main reason I have not issued a policy on the acceptance of Christmas gifts. Any unusual gift on the part of a supplier would cause me to feel that he had violated a friendship."

California: "A list of all gifts received by each buyer is recorded in our files so that by November 15th of the following year letters are sent, advising in a diplomatic way that we would like our name removed from their list of Christmas offers, and that a greeting card rather than a gift is appreciated. Over a period of time, all of our suppliers

(*Please turn to page* 322)

for BEST RESULTS in cutting the new
HIGH HEAT RESISTANT ALLOYS



specify

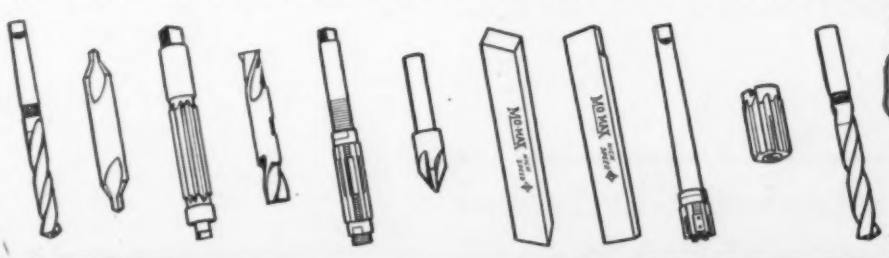
MO-MAX COBALT TOOL BITS

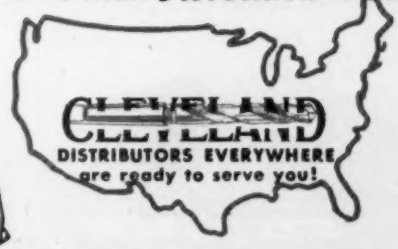
Where the going is rough, MO-MAX Cobalt High Speed Ground Tool Bits often give results that cannot be matched by other tool bits. The new high heat resistant alloys are a case in point. Few if any metals are as difficult to machine . . . yet, in many of these materials, test after test has demonstrated that MO-MAX Cobalt will do the job successfully. If you have a problem in machining these or other types of ferrous and non-ferrous alloys, a *Cleveland* Service Representative will be glad to give you helpful suggestions. Contact our nearest Stockroom, or . . .

Telephone Your Industrial Supply Distributor

THE CLEVELAND TWIST DRILL CO.
1242 East 49th Street • Cleveland 14, Ohio
Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 1 • San Francisco 5 • Los Angeles 58
E. P. Barrus, Ltd., London W. 3, England

ASK YOUR INDUSTRIAL SUPPLY DISTRIBUTOR FOR THESE AND OTHER *Cleveland* TOOLS





How they're using

LOK-THRED

for Positive Locking ...Greater Strength



GIANT ROCK CRUSHER
Allis-Chalmers' "Hydrocone", one of the largest of its kind. Huge 3" by 16½" LOK-THRED studs are standard to insure positive locking action and extra strength under the severe strains and vibrations to which this unit is subjected.



MERCURY OUTBOARD MOTOR
Made by Kiekhaefer Corporation. Three small LOK-THRED studs, ¼" by 1 5/16", secure handle to engine proper. Since the handle also serves as a throttle and connects with other integral mechanisms, secure attachment is vital for safe and efficient operation.

★

LOK-THRED may be had in ANY size stud, bolt or screw. Write for new LOK-THRED booklet.

★

National
HEADED AND THREADED PRODUCTS

THE NATIONAL SCREW & MFG. COMPANY
Cleveland 4, Ohio

Do Purchasing Agents Believe in Santa Claus?

(*Continued from page 320*)

thus become fully cognizant of our policy. Gifts that come in are few and far between and, all in all, are of insignificant value."

Georgia: "It is definitely understood by all personnel in our department that under no conditions are they to accept gifts or favors, even so far as lunches, whereby they might be influenced in awarding business to vendors. We have no objection to our employees being remembered at Christmas. My first thought on this subject is that the employee must know with whom he is dealing."

Connecticut: "It has always been handled here on the basis of an exchange of courtesy, and we have tried to share the items that come in with members of our own department and those with whom we come in contact, such as materials control department and telephone operators. Most of the items can be classified as advertising novelties. Each of our buyers receiving such gifts during the holiday period acknowledges them. I have never personally known that the practice was in any way abused."

Increasing or Decreasing?

New England: "The first year I was purchasing agent, I received 75 boxes of cigars at Christmas time. I found that the best way to cure this evil was by not acknowledging. On the other hand, the general sales manager of a company with which we annually do a half million dollars worth of business always presents me with a bottle of very fine brandy. I accept it and drink it, because I like it and I like him. He knows that it does not get him one iota of consideration to which he would not be entitled in comparison with his competitors. The whole thing revolves around the personality and attitude of the buyer. If he does not encourage it, it will fade out. Last year I received only 3 boxes of cigars. (They were of excellent quality.) Over the years this practice has dwindled down practically to advertising and similar tokens of very little intrinsic value and, to my mind, very little advertising value."

Midwest: "The practice of Christmas remembrances has grown very greatly, and frankly I am disturbed to some degree, based on my personal experience with the problem. I believe that, in the last analysis it can only be solved by the individual receiving the gifts using his own good judgment and being conscientious in his decision that he is first of all an employee of a company from whom he is receiving his pay check. I am firmly of the opinion that notices sent out to suppliers accomplish very little, if anything. Our policy does not forbid acceptance of holiday remembrances, although we try to play it down as far as possible by personal contacts with our suppliers and advice to our buyers. We are rather a young company, and as a consequence have younger men in rather

(*Please turn to page 326*)



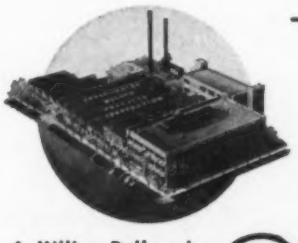
—Consolidated's "S.Q.C." Statistical Quality Control Insures Quality Production!

Precision Follow Thru of Specified Requirements Eliminates Customer's Inspection —Saves Money!

The parts we mold are truly counterparts of each other, because we police production with Statistical Quality Control. This system of scientific sampling trues output to the specifications set down for it—and saves money by sparing the customer any need for post delivery inspections.

Since 1874, Consolidated has practiced high quality custom molding. As of today, therefor, we can advantageously counsel on product design, determine the right material, produce the proper mold, and deliver the most desirable and most economical method of production. Your inquiry to our nearest or home office is invited!

Please address Dept. K-10



A Million Dollars in Custom Molding Facilities to Guarantee "Your Blueprint in Plastic"... with Savings!

CMP

Consolidated *Molded Products Corporation*

***Plant & Executive Offices:* 309 CHERRY ST., SCRANTON 2, PA.**

Branch Offices and Representatives in* New York, Chicago, Detroit, Cleveland, Bridgeport, Philadelphia—*and other principal cities

Take a tip from

R. R. ZISETTE
GENERAL SALES MANAGER
SKF INDUSTRIES, INC.
FRONT STREET & ERIE AVENUE
PHILADELPHIA 34, PA.



R. R. Zisette, Gen. Sales Mgr., SKF Industries, Inc., (left), talks pillow blocks with R. F. Plimpton, P.A. for the Electro Dynamic Division, of The Electric Boat Company.

Zisette of SKF Industries says, "Give the P. A. more for his dollar"

"The Purchasing Agent is constantly searching for more value for his company's dollar — that's his job and he's serious about it. Better design, better quality, better service — give him those and you'll get his purchase order." says Mr. R. R. Zisette, General Sales Manager, SKF Industries, Inc.

"The day of the conversational salesman, the 'good-time Charley'," adds Mr. Zisette, "is gone. This is why Purchasing Agents are our best contacts — SKF salesmen and P.A.s speak the same language."

In his constant search for more for his company's dollar, the purchasing executive turns naturally, and *regularly,* to *Purchasing* Magazine. Tailored to his exact needs . . . geared to today's competitive conditions, *Purchasing* speaks the P.A.'s language as no other publication can.

That is why you find SKF among the more than 600 companies who advertise consistently in *Purchasing.* Informative advertising in the P.A.'s own national magazine helps make your representatives' sales efforts more profitable and lowers the cost of securing the purchase order.

Because it's read by P.A.s controlling 85% of industry's purchases, *Purchasing* gives you more for your advertising dollar. No schedule to industry is *complete* without it. For full details, write *Purchasing,* 205 East 42nd St., New York 17, N. Y. Offices in Chicago, Cleveland, Dallas, Los Angeles.

PURCHASING

ABC

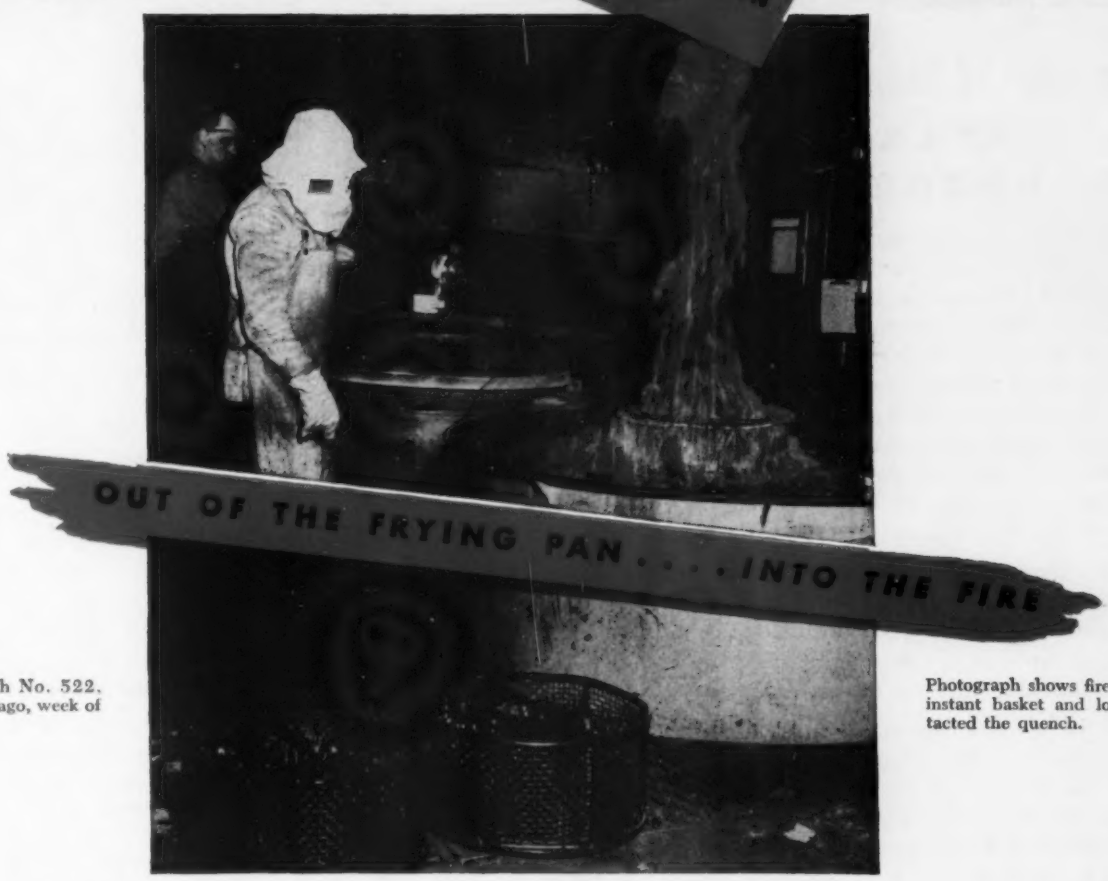
A CONOVER-MAST PUBLICATION

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES

ROLOCK

FABRICATED ALLOYS

HEAT AND CORROSION RESISTANT



Visit us at Booth No. 522. Metal Show, Chicago, week of October 23rd.

Photograph shows fire-flash at instant basket and load contacted the quench.

. . . just about the toughest shock for *any* basket. But Rolock fabricated-welded Pit Type Furnace Baskets now standardized at the Peck, Stow & Wilcox plant, Southington, Conn., are showing fine performance records in gas carburizing.

Their department head says, "Very satisfactory, not only in view of severe conditions, but also because they eliminate rough work handling from furnace to quench, which previously caused excessive distortion."

DETAILS: Baskets Inconel frame and cloth, 20" dia. x 11"; weight 45 lbs.; load 225 lbs. (hand tool parts); furnace temperature 1650° F.; oil quench (100° F.); ratio live-dead load 5 to 1; basket life 2 years. Furnace load 3 baskets.

ADVANTAGES: Light weight, greater furnace capacity, easier handling, uniform quench (wire cloth sides) providing complete case depth uniformity, minimum dragout loss of quench medium, lower costs.

Rolock engineers are cutting heat-hour costs and improving product quality. May we do so for you? Write for catalog.

Offices in: PHILADELPHIA • CLEVELAND • DETROIT • HOUSTON • INDIANAPOLIS • CHICAGO • ST. LOUIS • LOS ANGELES • MINNEAPOLIS

ROLOCK INC. • 1272 KINGS HIGHWAY, FAIRFIELD, CONN.

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

8-RL-50

Fast Acting Fire Watchman



on duty 24 hours a day...
AT EACH FIRE HAZARD POINT

Let C-O-TWO safeguard your property from fire, even if you have a night watchman on duty. With a C-O-TWO Combination Smoke Detecting and Fire Extinguishing System you have an automatic, round-the-clock fire watchman that simultaneously guards each fire hazard point. The first trace of smoke in a protected area is drawn through pipes to a smoke detector. Immediately an alarm sounds . . . then fast, clean carbon dioxide gas fully floods the stricken area . . . the fire is out before it has a chance to spread and cause extensive damage.

Actual fire tests made by the Underwriters' Laboratories, Inc. show that fire detection with this type of smoke detecting equipment is much quicker than other methods . . . because usually there is smoke or smoldering before flames break out.

There is no water damage, no lingering odors with carbon dioxide . . . only damage is that actually caused by the fire itself. Carbon dioxide is clean, dry, non-conducting and non-damaging . . . harmless to finishes, materials and equipment. The fire is out in seconds, with hardly any interruption or commotion.

Remember fire doesn't wait . . . let an expert C-O-TWO Fire Protection Engineer advise you on your fire protection needs now, before fire strikes. Write today for complete free information!



C-O-TWO

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY
Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

Do Purchasing Agents Believe in Santa Claus?

(*Continued from page 322*)

responsible positions—more than the average, I believe. I have endeavored at every opportunity to get into the homes of such employees, and talk to the man, with his wife present, about the ethics of purchasing and the responsibility he has in vendor relationship along this line."

West Coast: "I think most of the gifts are gestures of friendliness, and with no ulterior motives. I would certainly subscribe to any satisfactory plan which would eliminate them entirely. We have laid down a definite policy, which I believe is not only endorsed by every buyer, but strictly carried out—that no Christmas gift, regardless of form or size, must in any way prejudice a buyer for or against competitive accounts. Acceptance of liquor—either by the bottle or by the case—remains pretty much a matter of the buyer's choice. I personally refuse to accept such gifts."

1 1 1

Proper Flooring Is A Wise Investment

(*Continued from page 99*)

and cannot be stained. Its non-chip quality makes it very durable. As cork will not burn, fire-resistance is another valuable property of this flooring. Initial cost is somewhat higher than either asphalt or rubber tile, but its long-wearing qualities make it an economical luxury flooring.

Right Floor Adds to Efficiency

At today's high labor rates, higher productivity per worker is regarded as the principal way management can hold down unit costs to meet competition and the growing consumer resistance to high prices.

In their search for methods to boost production and hold down unit costs, many manufacturers have discovered that the seemingly simple matter of the type of flooring used in their plants has a distinct bearing on worker output and on that part of overhead chargeable to floor maintenance. Consequently, these factors today are receiving attention equal to that given any other single part of plant layout and design.

Time-study engineers agree that output per worker decreases in direct ratio to the degree the worker is suffering from fatigue and that spoiled work and accidents increase by the same ratio. To reduce the factor as much as possible, many fac-

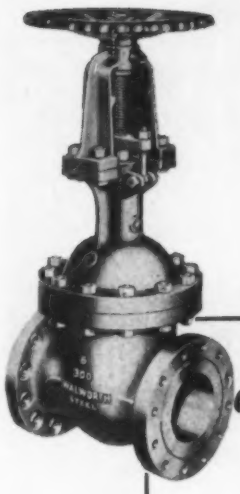
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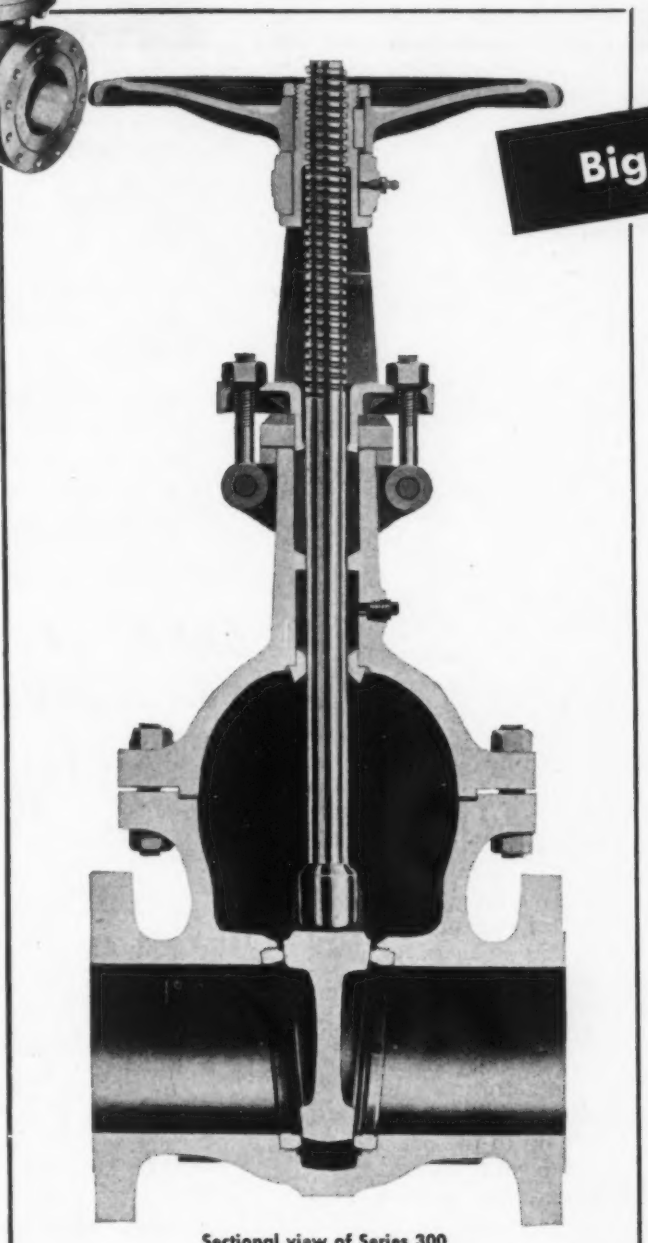
WALWORTH

Cast Steel Gate Valves

Series 150 and 300

Wedge Gate — Outside Screw and Yoke





Sectional view of Series 300

Big 8-Point Superiority!

Gland clearances are such that stem cannot be scored if gland should be tightened unevenly.

Deep Stuffing Boxes in all sizes (2" to 24") insure tightness and maximum packing life – costly leaks are eliminated.

Bonnets and Bodies are engineered to withstand pressure and minimize distortion – they're tough, durable, dependable.

Heavy Steel Walls provide extra strength and longer life.

Integral Body Guide Rib Faces are machined to insure accurate disc seating.

Seat Rings are bottom seated – not flange type. No recess exists at back of ring – hence no turbulence, erosion, or pressure drop.

Streamlined Ports allow high velocity, non-turbulent flow, and reduce the possibility of erosion.

Valves regularly have flanged ends. They can be supplied with ends for butt welding. Roller bearing yokes are available. On valves 5 inches and larger, by-passes can be furnished.

For Series 600 and higher, we recommend Walworth Pressure-Seal Steel Gate Valves.

For further information on Walworth Cast Steel Gate Valves, see your local Walworth distributor, or write:

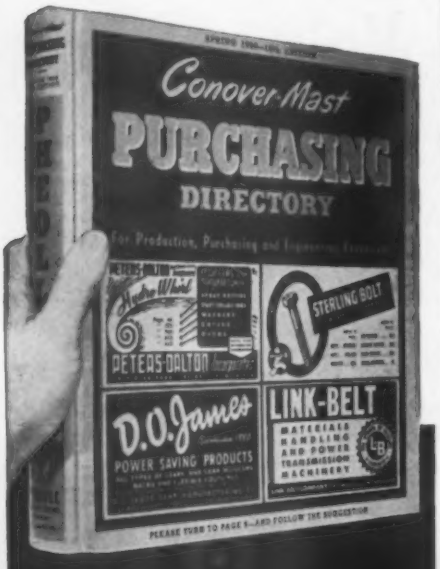
WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

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It is made for YOU



so it's complete—
but EASY to use

In building this Directory for purchasing, production, and engineering executives, all non-industrial listings and advertisements are rigidly excluded. That's why it's so compact—yet complete.

Reference to the CONOVER-MAST PURCHASING DIRECTORY is the easiest and quickest way to find sources of equipment, products, and supplies used in industry.

✓ CONOVER-MAST PURCHASING DIRECTORY is complete, and it's easy to find what you're looking for. Use it regularly—the more you use it the better you'll like it.

Conover-Mast
PURCHASING
DIRECTORY

737 N. Michigan Ave., Chicago 11, Ill.

Proper Flooring Is A Wise Investment

(*Continued from page 326*)

tories have established a system of rest periods and installed shock-absorbing flooring.

To summarize: The choice of flooring should be governed by its end use. Strength, easy repair and maintenance, and safety considerations are important in factory flooring. Attractiveness, color and design possibilities, resilience, durability, and easy maintenance and repair are leading requirements for flooring in office, reception room and company restaurant area. A flooring properly selected for each of these end uses may well outlive the building in which it is housed and yet stay sparkling fresh to pay high dividends on the original flooring investment.

Personal Goods Purchaser

(*Continued from page 118*)

dress goods, and candy. Almost every order includes some item of States-side food.

Most customers know prices and send payment in advance. But Ames trusts people and frequently ships on open account to people with whom he has had no previous dealings. He figures that the customer was recommended by a friend, who wouldn't give Impex a bum steer. He hasn't lost a nickel yet.

Usually, Impex buys direct from the manufacturer or wholesaler, and bills at the retail price. On occasion, Ames has bought one of a kind at retail. "We generally manage to wangle a discount from the store manager," he notes, "by pointing out the future volume potential of our orders."

Most shipments are made by air, because people are in a hurry. At destination, it's up to the consignee to get it through customs and pay special local taxes, as well as the freight.

CENTRIFUGAL CASTINGS SERVICE IN ALL METALS

Typical centrifugally cast parts are made by the American Non-Gran Bronze Co., Berwyn, Pa., in all metals. Parts include cast liners, rings, rolls, sleeves, bushings, and so on. Castings are blanked to the customer's specifications, thus assuring a minimum of metal to be purchased and machine. Printed matter available.

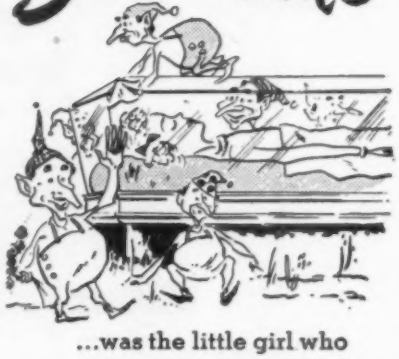
Herbrand
PRECISION
DROP FORGINGS
...any size or shape up to 200 lbs.

Whatever your requirements in forgings, Herbrand is your most faithful source of supply . . . as it has been for hundreds of industries since 1881. Your inquiries are solicited.

Herbrand DIVISION
THE BINGHAM-HERBRAND CORP.
FREMONT, OHIO

GREAT SLEEPS IN HISTORY

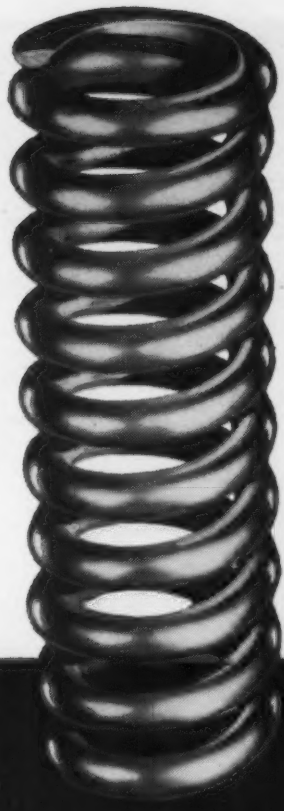
Snow White



...was the little girl who slept and dreamed of Wonderland. *Slumberland* is the favorite dream of over a quarter of a million guests who annually rest on those wonderful, cloud-comfortable beds at

CLEVELAND'S HOTEL HOLLENDEN
ROBERT P. JOYCE, GENERAL MANAGER





How much should a spring cost?



● It all depends on the job it has to do. Because *overdesign* is just as bad as *underdesign*. You lose both ways—the end product either performs poorly, or it costs too much.

When costs are important, and they usually are, we don't believe in designing springs with unnecessary, elaborate and costly performance characteristics. We don't recommend stainless or high alloy steels if carbon steel will do the job. And we're quick to suggest ways to simplify springs—and cut their cost. You can be sure that, whenever it's possible, our designs will utilize the lowest cost material and fabrication methods that will do a good job for you.

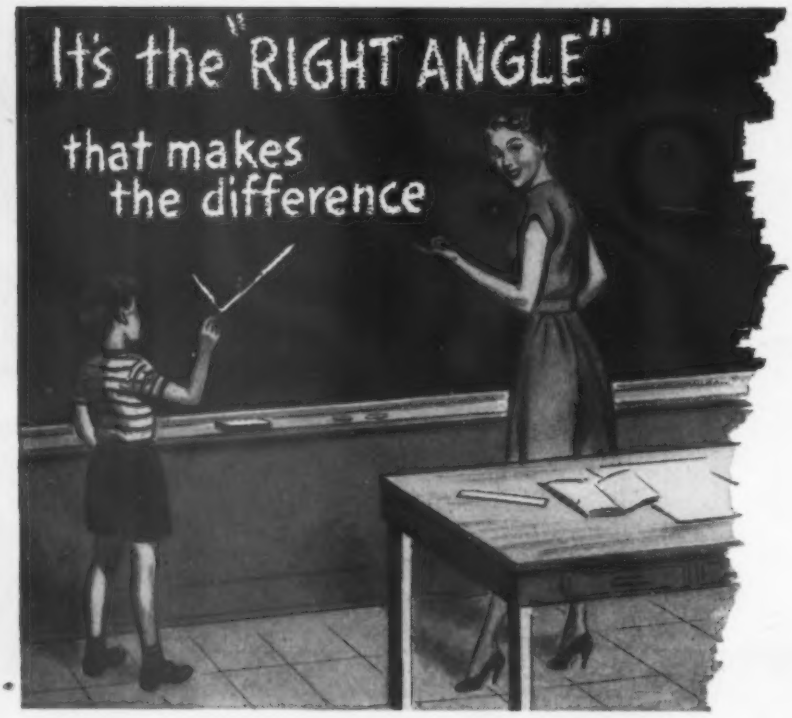
Let our engineering staff—our comprehensive production and testing facilities go to work for you. You'll get a better spring—at a price—that will fit your needs *exactly*.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

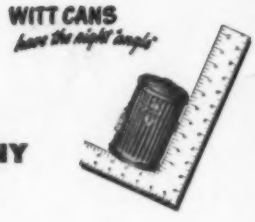
AMERICAN QUALITY SPRINGS

UNITED STATES STEEL



STRAIGHT SIDES provide rugged strength . . . greater resistance to rough handling . . . longer wear.

Yes, the "right angle" shape has much to do with the popularity of WITT CANS. The *straight sides* assure extra resistance to rough handling and are further strengthened by the *deep rolling corrugations,* which run the full length of the body, rugged *heavy gauge steel,* and top and bottom *structural steel bands.* Rust proofing is insured by a hand *hot dip galvanizing process.* The *pinch-proof handles* and sturdy *one-piece top* completes the WITT CAN except for the famous *Quality Assuring Guarantee*—WITT CANS outlast ordinary Cans 3 to 5 times.





Witt Cans

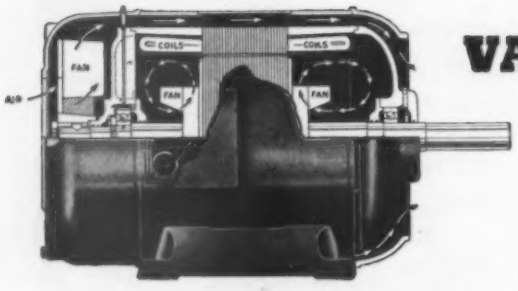
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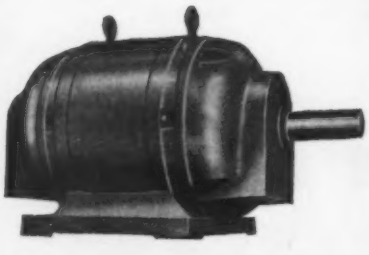


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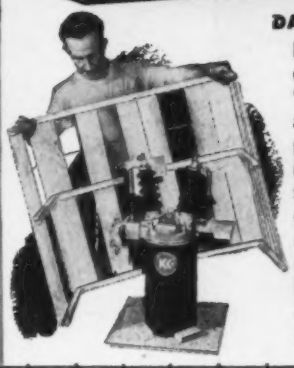


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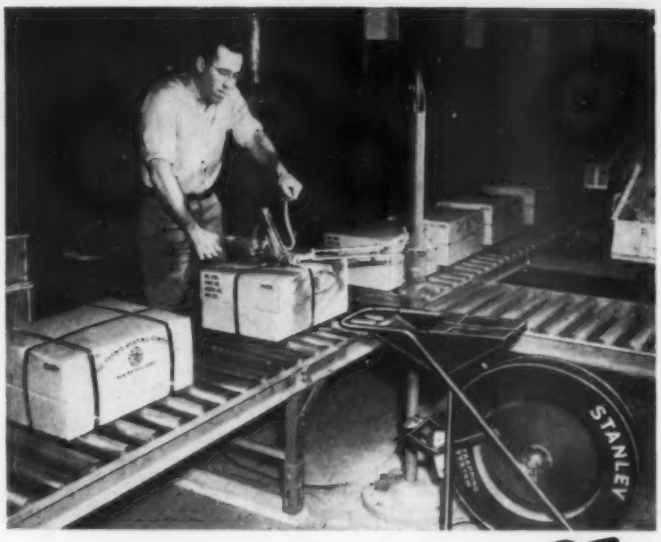
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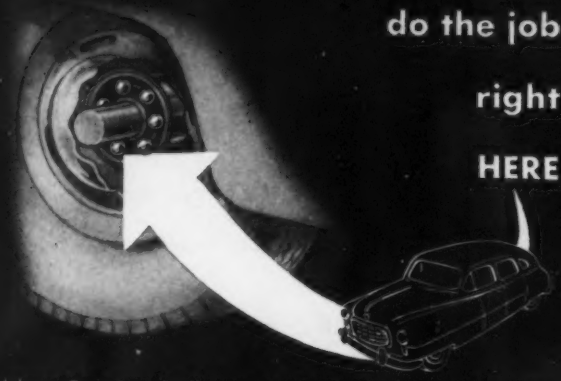
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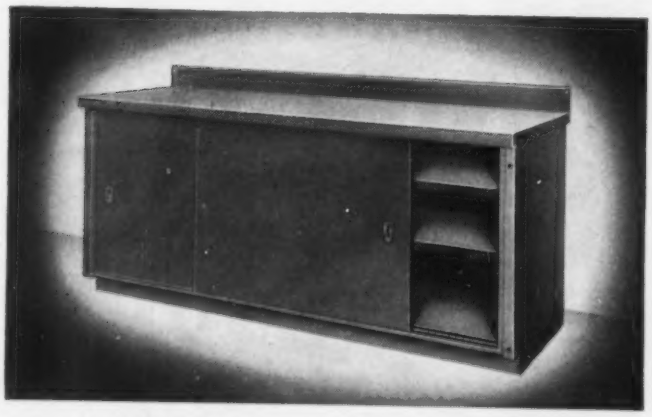


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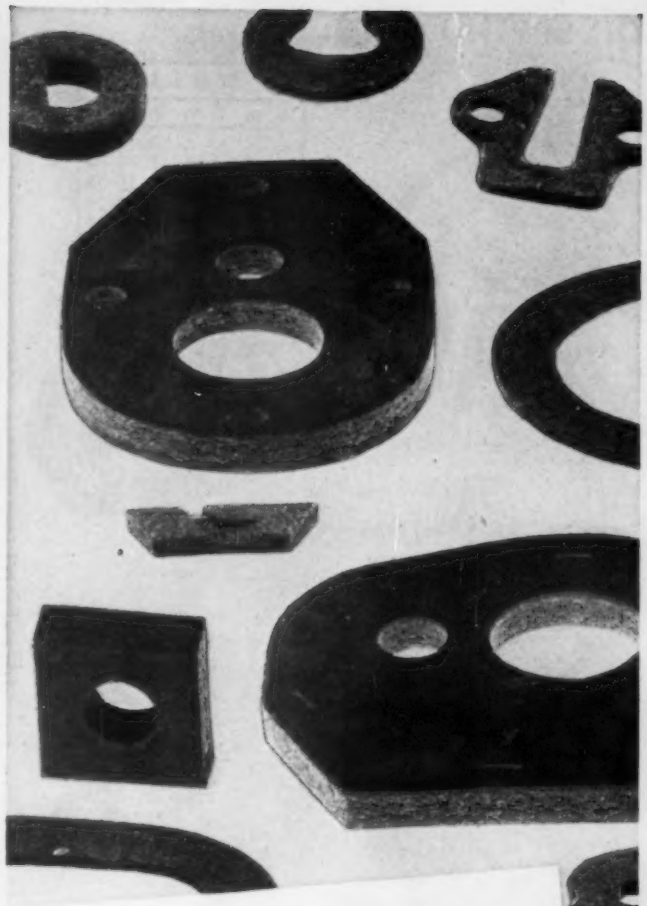
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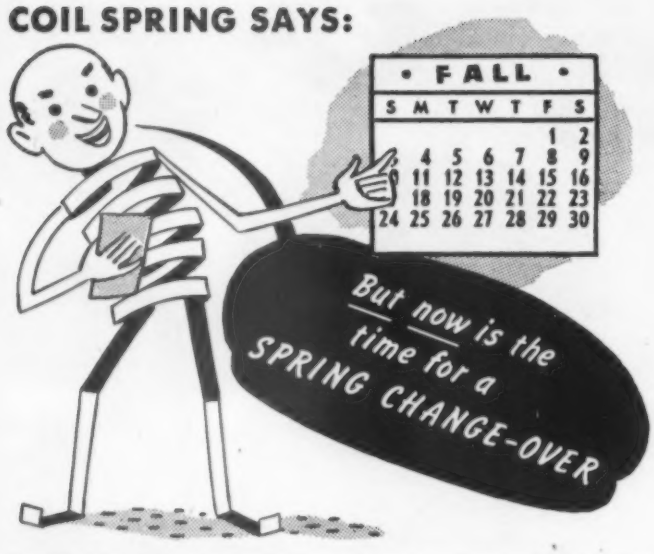
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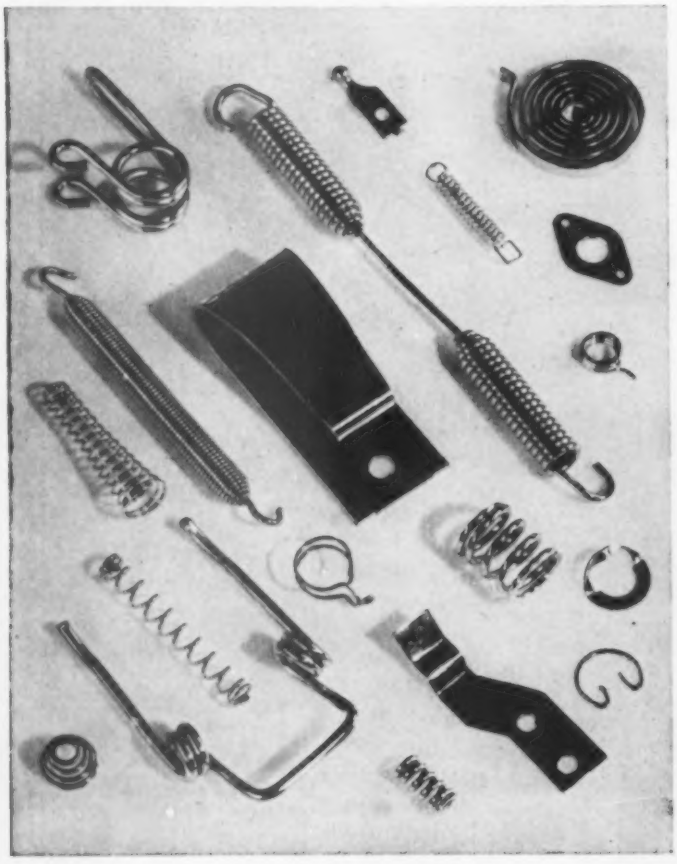
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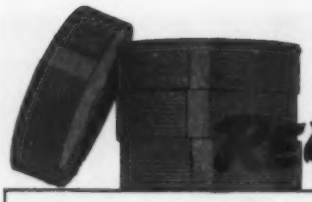




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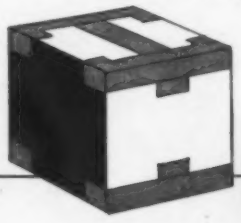
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LETTERS . . .

PURCHASE FOR PROFIT

I consider the June Purchase-for-Profit Issue the most useful to date. This particular issue is set aside for study of our buyers and for reference in our departmental supervisor meetings.

Naturally also this issue is singled out for use in our district council and educational committee meetings for promotion of educational advancement in District Seven.

George H. Cole, Purchasing Agent
Alabama Power Co.,
Birmingham 2, Ala.

HUNCH REMOVERS

We are interested in getting additional information on an article which appeared in the July 1950 issue, entitled "Formulas Take Hunches Out of Purchasing" by Tyler G. Hicks, M.E.

One of the biggest questions is how to handle the formula when increased quantities give progressively decreasing unit costs. In addition, could we obtain a more complete discussion of the techniques involved.

H. M. Wilson, Director of Purchases & Production Control
Victor Adding Machine Co.
Chicago 18, Ill.

● Two previously published articles, "Buying the Right Quantity" by W. J. Roemer (PURCHASING, December 1947), and "Purchasing Profits through Inventory Control" by B. D. Henderson (PURCHASING, November 1947), deal specifically with the application of purchase quantity formulas where a quantity discount is involved in the calculation.—Ed.

"LIMITED" PURCHASE ORDERS

We are looking for information regarding practices by certain companies which require the signature or endorsement of an authorized officer of the company on purchase orders where the expenditure involved exceeds a set limit.

Do these companies have a statement or provision on their purchase order forms?

W. J. Growney, Purchasing Agent
Charms Co.
Asbury Park, N. J.

● The practice of requiring specific authorization for purchases in excess of a set amount, is fairly common in industry. This is handled as a matter of internal company policy and procedure, prior to the issuing of the purchase order. We have never seen a purchase order form with a printed statement or clause of this nature.

The effect of such a clause included in the order would be to put the vendor on guard against accepting an order, or delivering goods against an order, where this requirement of special signature or authorization is not observed. This would seem to be an unreasonable transfer to the vendor of a responsibility that really belongs in the buyer's own organization. A vendor should be able to assume that an order issued on a company's standard purchase order form and bearing the signature of the purchasing agent is a valid order. In the ordinary course of business he would not be expected to question the validity of the order on a technicality where the difference of a few dollars one way or another might change the buying company's policy with respect to the transaction. It is the buyer's responsibility to see that no invalid order is issued.

The only exceptions that we have seen to this practice are in the case of companies where field men or operating men are authorized to make small emergency purchases, usually subject to confirmation by the purchasing department, but necessarily after the purchase has been completed. When such purchases are authorized, it is customary to furnish the accredited personnel with order blanks—but these are not standard purchase order forms and do not carry the purchase agent's signature. In some such cases, the forms are imprinted in large type with the statement "NOT TO EXCEED $25" or whatever limit has been set on such purchases.—Ed.

PURCHASING PERSONNEL

Is any information available regarding a survey of the number of personnel in purchasing departments as compared to the number in the rest of the organization?

H. E. Eastman, Purchasing Agent
Clary Multiplier Corporation
San Gabriel, Calif.

● Analysis of a representative number of surveys indicates that there is no correlation between the size of the purchasing department and the total number of workers. The reason for this seems to be the great diversity in the number of workers required for different types of industry, as well as the varying degrees of complexity in the purchasing operation itself according to the type of industry. With two such variables in the problem, it is not surprising that the answer shows no definite pattern.

We made a study some time ago trying to find a correlation between the number of purchasing personnel and the dollar volume of purchases. Though there would seem to be a direct relationship between these two factors, we found very little correlation, probably for the same reasons outlined above.

Apparently the only sound basis for comparison is to compare the situation as it exists in companies that are engaged in the same general type of operation and are of approximately the same size overall. —Ed.

HE HAS TWO PROBLEMS

I am a subscriber to your fine magazine and I enjoy much benefit and enjoyment from it.

I have the following two problems with which I hope you can help me.

(1) Address of the Wilson Sporting Goods Company.

(2) Source of Eagle Brand Steel Wool #2. We have been buying it from a local grocery in 1# rolls. We want to buy it wholesale in large quantities.

Wallace E. Mason, Purchasing Agent
Houghton College Book Store,
Houghton, N. C.

● The Wilson Sporting Goods Company is at 2037 North Campbell Ave., Chicago, Ill.

We do not know who makes Eagle Brand Steel Wool #2. But some of the steel wool manufacturers are:

American Steel Wool Mfg. Co., 42-42 Orchard St., Long Island City, N. Y.

Brillo Mfg. Co., 58 John St., Brooklyn, N. Y.

James H. Rhodes & Co., 48-02 29th St., Long Island City, N. Y.

International Steel Wool Corp., Springfield, Ohio.

Allied Industrial Products Co., 622 N. Michigan Ave., Chicago, Ill.—Ed.

TAPPING SPEED DOUBLER

The June issue contained an item on tapping speed under "Cost Saving Item 226" but no firm name was given. As several of our readers have expressed an interest in further information we wondered if you could advise the firm name.

Florence E. Wood, Librarian.
Grinnell Corp.
Providence, R. I.

● Shearcut Tool Co., P. O. Box 746, Reseda, Calif.—Ed.



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According to Steel Founders' Society of America, for every million tons of steel castings produced, nearly 2¼ million tons of raw materials are consumed.

Included in this massive mountain of material are 1,225,000 net tons of scrap steel, 700,000 tons of sand, 165,900 tons of pig iron, 70,000 tons of fuel oil, 25,000 tons of limestone, 25,000 tons of organic and clay binders, and 25,000 tons of other miscellaneous materials.

In addition, for each million tons of steel castings, the industry uses 300,000,000 kilowatt hours of electric power, enough to supply a population of 1,000,000 people with electricity for a whole year; as well as 1,000,000,000 cubic feet of gas, also ample to supply a population of 60,000 with gas for a whole year.

MECHANICALLY REMOVING FLASH AND FINS FROM PLASTIC PARTS

A mechanical method of removing flash and fins from molded plastic parts is discussed in an industry report just published by American Wheelabrator and Equipment Corp. entitled "The Use of the Airless Wheelabrator in the Mechanical Finishing of Plastics".

The well illustrated bulletin describes how Minneapolis-Honeywell Regulator Co. is saving $100,000 yearly by eliminating the hand-finishing of molded plastic parts. The flash and fins are now removed by placing the parts in a 20" x 27" Wheelabrator Tumblast and blasting them with a controlled blast of small, non-abrading pellets. Before and after pictures of typical parts cleaned of flash and fins by the Wheelabrator method are shown.

A copy of Bulletin No. 674 may be obtained by writing to American Wheelabrator and Equipment Corp., 4 South Byrkit Street, Mishawaka, Indiana.

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CONVERTER FOR USING 3-PHASE MOTORS ON SINGLE PHASE LINES

The Henry Electric Co., Saginaw, Mich., announces the Henry phase converter which makes possible the use of 3-phase 220 volt motors on single-phase 220 volt power lines. It is said to maintain high efficiency while increasing the power factor of the 3-phase equipment. The converters are designed for use with 3, 5 or 7½ hp motors. Fuse blocks with proper sized Fusetrons are standard equipment and eliminate the need for a separate fusible disconnect. Heavy duty, non-fusible toggle switches make separate motor starting controls unnecessary. Printed matter available.

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INDUSTRIAL BUYER, minimum 5 years experience. Should have some electronics background. Address resume of experience and salary to P.O. Box 1159, Kansas City 10, Missouri.

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Give Full Specifications:
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One (1) Yates—G-77—Self Feed Straight Line Glue Joint Rip Saw—Ser. #B4693 Complete with 1 Westinghouse 3.2 H.P., 575 RPM Motor and 1 Westinghouse 15 H.P. 3500 RPM Motor—Ball Bearing—Direct Motor Driven—6' 5" x 5' 4" Table.
Price $700.00
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Advertisers IN THIS ISSUE

A

Abbott Ball Company, The 333
Accurate Spring Mfg. Co. 341
Acme Steel Co. 226
Adam Electric Co., Frank 229
Air Express Div., Railway Express Agency, Inc. 308
Air Reduction Sales Co. & Subsidiaries 206, 207
Alemite Div., Stewart-Warner Corp. 303
Allen Mfg. Co. 170
Allison Co. 332
Aluminum Company of America
Die Castings 334
Screw Machine Products 209
Aluminum Goods Mfg. Co. 21
American Brake Shoe Co., National Bearing Div. 301
American Brass Co., The 159
American Chain Div. 210
American Chain & Cable Co., Inc. 66, 210, 232, 304
American Die Casting Institute 313
American Optical Co. 136
American Rivet Company 286
American Screw Company 271
American Smelting & Refining Co. 339
American Steel & Wire Co. 275, 329
Amplex Mfg. Co. 40
Anaconda Copper Mining & Subsid. Cos. 159
Anchor Post Fence Co. 164
Ansul Chemical Company 156
Anti-Corrosive Metal Products Co., Inc. 214
Anti-Friction Bearing Distributors' Association, The 178
Arkwright Finishing Co. 158
Armstrong-Bray & Co. 224
Arrow-Hart & Hegeman Electric Co., The 246
Associated Spring Corp. 231
Athenia Steel Co. 216
Atkins & Co., E. C. 133

B

Babcock & Wilcox Tube Co. 119
Bakelite Div. 273
Baldwin-Hill Company 30
Baldwin Locomotive Works, The 282, 283, 335
Baltimore & Ohio Railroad, Freight Dept. 58
Barnes Co., Inc., W. O. 268
Barnes Co., Wallace 231
Barnes Co. Ltd., Wallace, The 231
Barnes-Gibson-Raymond 231
Bassick Co., The 344
Bay State Tap & Die Co. 218
Bead Chain Mfg. Co. 144
Beall Tool Div., Hubbard & Co. 312
Bemis Bro. Bag Co. 26
Bendix Aviation Corp., Scintilla Magneto Div. 139
Best Pencil Company, Richard 201
Bethlehem Steel Co. 298
Billings & Spencer Co. 254
Blake & Johnson Co., The 271
Blaw-Knox Co. 240
Bond Foundry & Machine Co. 244
Boorum & Pease Company 194
Bridgeport Brass Co. 272
Bristol Brass Corp. 247
Brown Bag Filling Machine Co. 256
Brown-Bridge Mills, Inc. 334
Brownville Paper Co. 192

C

Camcar Screw & Mfg. Co. 271
Campbell Chain Company 252
Canadian International Trade Fair 144
Carnegie-Illinois Steel Corp. 275
Carpenter Steel Company, The 315
Central Paper Company 318
Central Paper Company, Inc. 314
Central Screw Company 271
Century Electric Company 3
Champion Lamp Works 132
Chase Bag Co. 35
Chase Brass & Copper Co., Inc. 237
Chester Hoist Div., National Screw & Mfg. Co. 260
Cities Service Cos. 149
Classified Advertising Section 338
Cleveland Cap Screw Co. ..... 2nd Cover
Cleveland Container Co., The 286
Cleveland Twist Drill Co. 321
Cold Metal Products Co. 121
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. 241
Colson Corp., The 148
Columbia Steel Company 275, 329
CONOVER-MAST PURCHASING DIRECTORY 328
Consolidated Business Systems, Inc. 192
Consolidated Electric Lamp Co., Champion Lamp Works 132
Consolidated Molded Products Corp. 323
Container Corp. of America 161
Continental Screw Company 176, 271
Continental Steel Corp. 255
Copperweld Steel Company 257
Corning Glass Works 343
C-O-Two Fire Equipment Co. 326
Crane Co. 14
Crocker-Wheeler Div., The Elliott Co. 32, 33
Crucible Steel Company of America 305

D

Darnell Corp., Ltd. 288
Disston & Sons, Inc., Henry 285
Dodge Mfg. Corp. 44
Dolge Co., C. B. 260
Dravo Corp. 304
Dunbar Bros. Co. Div. 231
Dy-Chek Company 261

E

Eagle-Picher Sales Co., The 160
Eaton Mfg. Co. 169, 235
Eberhard-Faber Pencil Co. 192
Elastic Stop Nut Corp. of America 154, 155
Elco Tool & Screw Corp. 264, 271
Electric Auto-Lite Co. 173
Electric Storage Battery Co. 54
Electric Wheel Company 228
Elliott Co., The, Crocker-Wheeler Div. 32, 33
Emerson Electric Mfg. Co. 280
Equitable Paper Bag Co. 196
Esleeck Mfg. Co. 201
Etching Company of America 284
Eureka Specialty Printing Co. 196
Ex-Cell-O Corporation 281

F

Fafnir Bearings Co. 28
Federated Metals Div., American Smelting & Refining Co. 160
Ferry Cap & Set Screw Co. 317
Flexible Steel Lacing Co. 134
Frasse & Co., Inc., Peter A. 299
French & Hecht Div., Kelsey-Hayes Wheel Co. 331
Fuller Brush Co. 242

G

Garrett Co., Inc., George K. 142
Gates Rubber Co. 227
General Box Co. 6
General Chemical Div., Allied Chemical & Dye Corp. 337
General Electric Company
Apparatus Div. 146, 147
Lamp Div. 203
General Tire & Rubber Co. 140
Gerson-Stewart Corp. 320
Gibson Co., William D., The 231
Gits Bros. Mfg. Co. 259
Globe Steel Tubes Co. 291
Goodrich Co., B. F. 4, 157
Goodyear Tire & Rubber Co., Inc. 41
Gould-National Batteries, Inc. 205
Graybar Electric Co., Inc. 64
Great Lakes Screw Corp. 271
Greenfield Tap & Die Corp. 51, 52
Grinnell Co., Inc. 225
Gulf Oil Corp. 22

H

Harnischfeger Corporation 9, 129, 245
Harper Co., The H. M. 271
Hartzell Propeller Fan Company 319
Herbrand Div., Bingham-Herbrand Corp. 328
Hinde & Dauch Paper Co. 251
Hoover Ball & Bearing Co. 238
Hotel Hollenden 328
Hudson Pulp & Paper Corp. 309

I

Independent Pneumatic Tool Co. 262
Industrial Tape Corp. 212
Inland Steel Company 5
International Staple & Machine Co. 221

J

Jenkins Bros. ..... 4th Cover
Johns-Manville Corp. 295
Johnson Bronze Co. 294

K

Kaiser Aluminum & Chemical Corp. 141
Keasbey & Mattison Co. 213
Kempsmith Machine Company 172
Kex National Service 236
Keystone Steel & Wire Co. 306
Kidde & Co., Inc., Walter 265
Kimberly-Clark Corp. 53

L

Laminated Shim Co., Inc. 31
Link-Belt Co. 11
Lunkenheimer Co. 131
Lyon Metal Products Inc. 37

M

Macwhyte Co. 25
Marsh Corp., Jas. P. 266
Master Electric Co. 127
Micro Switch 59
Midwest Piping & Supply Co. 211
Millers Falls Co. 243
Mills Corporation, Elmer E. 219
Milwaukee Dustless Brush Co. 302
Mine Safety Appliances Company 263
Minneapolis-Honeywell Regulator Co. (Industrial Div.) 307
Minnesota Mining & Mfg. Co. 189
Missouri-Kansas-Texas Lines 278
Moore Business Forms, Inc. 202
Morris Company, Bert M. 181

N

National Bearing Div., Amer. Brake Shoe Co. 301
National Blank Book Company 187
National Electric Products Corp. 17
National Forge & Ordnance Co. 10
National Lead Co. 239
National Lock Company 271
National Pencil Co. 198
National Sanitary Supply Assn. 310
National Screw & Mfg. Co. 260, 322
National-Standard Co. 216
National Supply Co., Spang-Chalfant Div. 27
National Tube Company 275
Newark Wire Cloth Co. 300
Niagara Blower Company 168
Nicholson File Co. 18
Norma Pencil Company 190
Norton Company 215

O

Oakite Products, Inc. 316
Ohio Brass Company 233
Ohio Div., Association Spring Corp. 231
Ohio Injector Co., The 253
Okonite Co. 269
Osborn Mfg. Co. 7
Oxford Filing Supply Co. 201

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P

Page Fence Association 314
Page Steel & Wire Div. 304
Parker-Kalon Corp. 16, 271
Pheoll Mfg. Co. 271
Pittsburgh Plate Glass Co.
Brush Division 150
Columbia Chemical Div. 68
Plumb, Inc., Fayette R. 217
Potter & Brumfield 316
Powell Co., William 38
PURCHASING Magazine 324
Purdy & Co., Inc., A. R. 62

Q

Quaker Rubber Corp. 277

R

Railway Express Agency, Inc. 222
Railway Express Agency, Inc., Air Express Div. 308
Randolph Laboratories, Inc. 230
Rathborne, Hair & Ridgway Box Co. 60
Raymond Mfg. Co. 231
Remington Rand, Inc. 185
Republic Steel Corp. 163
Revere Copper & Brass Inc. 296
Richardson Co., The 36
Ridge Tool Co. 258
Rising Paper Co. 200
Riverside Metal Company 49
Roberts Rubber Co., Weldon 198
Rockford Screw Products Co. 271
Roebling's Sons Co., John A. 45, 142
Rolock, Inc. 325
Russell, Burdsall & Ward Bolt & Nut Co. 63
Ryerson & Son, Inc., Joseph T. 70

S

Safeguard Corp. 198
Sawyer & Son Co., The H. M. 274
Scovill Mfg. Co., Waterville Div....234, 271
Screw Research Association 271
Security Steel Equipment Corp. 199
Set Screw & Mfg. Co. 310
Severance Tool Industries, Inc. 331
Sexauer Mfg. Co., Inc., J. A. 335
Shakeproof, Inc. 271
Sheffield Tube Corporation, The 311
Sheppard Envelope Co. 200
Simonds Gear & Mfg. Co. 290
Simonds Saw & Steel Co. 42
SKF Industries, Inc. 166, 167
Socony-Vacuum Oil Co., Inc. 61
Solvay Sales Div., Allied Chemical & Dye Corp. 297
Southington Hdwe. Mfg. Co., The 271
Spang-Chalfant Div., National Supply Co. 27
Speer Carbon Company 152
Sponge Rubber Products Co. 55
Standard Conveyor Company 214
Standard Pressed Steel Co. 304, 333
Standard Tube Co. 137
Stanley Electric Tool Div. 34
Stanley Works, The 332
Starrett Co., The L. S. 123
Steinen Mfg. Co., Wm. 224
Sterling Bolt Co. 43
Strathmore Paper Co. 195
Strom Steel Ball Co. 320
Strong Carlisle & Hammond Co. 224
Sturtevant Mill Co. 8
Sun Oil Co. 249
Superior Foundry, Inc. 270
Superior Steel Corp. 135
Superior Tube Co. 177
Sylvania Electric Products, Inc. 287
Synthane Corp. 46, 47

T

Taylor Co., Halsey W. 152
Tennessee Coal, Iron & Railroad Company 275, 329
Texas Company .....2nd Cover
Thermoid Company 29
Thompson & Son Co., The Henry G. 208
Threadwell Tap & Die Co. 138
Timken Roller Bearing Co. 289
Tower Company, A. J. 172
Towmotor Corp. 238
Tri-Lok Company 304
Triplex Screw Co. 276
Trumbull Electric Mfg. Co. 174, 175
Tube Reducing Corp. 267
Tube-Turns, Inc. 151

U

Uarco, Inc. 197
Udylite Corp. 279
Underwood Corp. 191
Union Bag & Paper Corp. 143
Union Chain & Mfg. Co., The 56, 57
U. S. Radium Corp. 318
U. S. Rubber Co. 148, 171
U. S. Steel Export Company 275, 329
U. S. Steel Supply Co. 275
U. S. Steel Wire Spring Co., The 334
Utica Drop Forge & Tool Corp. 293

V

Valley Electric Corp. 330
Van Dorn Electric Tool Co. 153
Veeder-Root, Inc. 162

W

Wagner Electric Corp. 48
Wagner Litho Machinery Co. 216
Waldron & Co., Inc. 288
Wales-Beech Corp. 271
Walforth Company 327
Washington Steel Corp. 220
Webster Co., F. S. 193
Weirton Steel Co. 145
Western Felt Works 333
Western Pine Association 335
Westinghouse Electric Corp. 39, 3rd Cover
Westinghouse Electric Corp., Lamp Div. 223
Wheeler Reflector Co. 12
Whitney Chain Company 50
Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp. 241
Wirebound Box Manufacturers Asso. 331
Wisconsin Motor Corp. 228
Witt Cornice Co. 330
Worcester Wire Works 216
Wright Hoist Div. 66
Wrought Washer Mfg. Co. 134

Y

Yale & Towne Mfg. Co. 165
Youngstown Sheet & Tube Co. 125

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of Purchasing, published monthly at Orange, Conn. for October 1, 1950.

State of New York }
ss.
County of New York }

Before me, a Notary Ppblic in and for the State and county aforesaid, personally appeared A. M. Morse, Jr., who, having been duly sworn according to law, deposed and says that he is the Business Manager of the magazine "Purchasing" and that the following is, to the best of his knowledge and belief, a true staement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537 Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

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Sworn to and subscribed before me this 15th day of September, 1950

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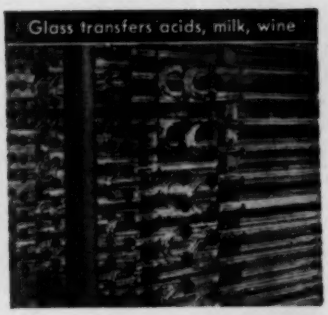
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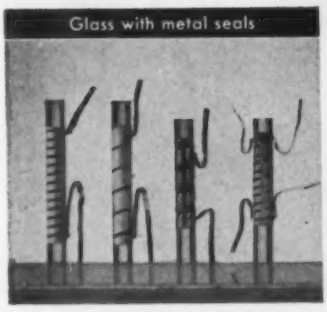
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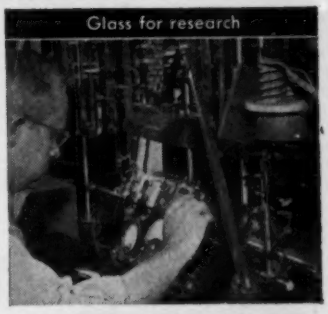






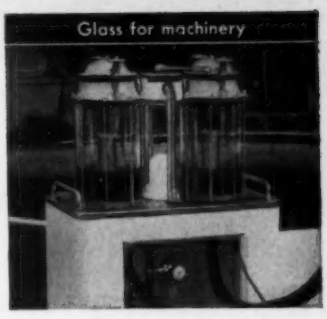












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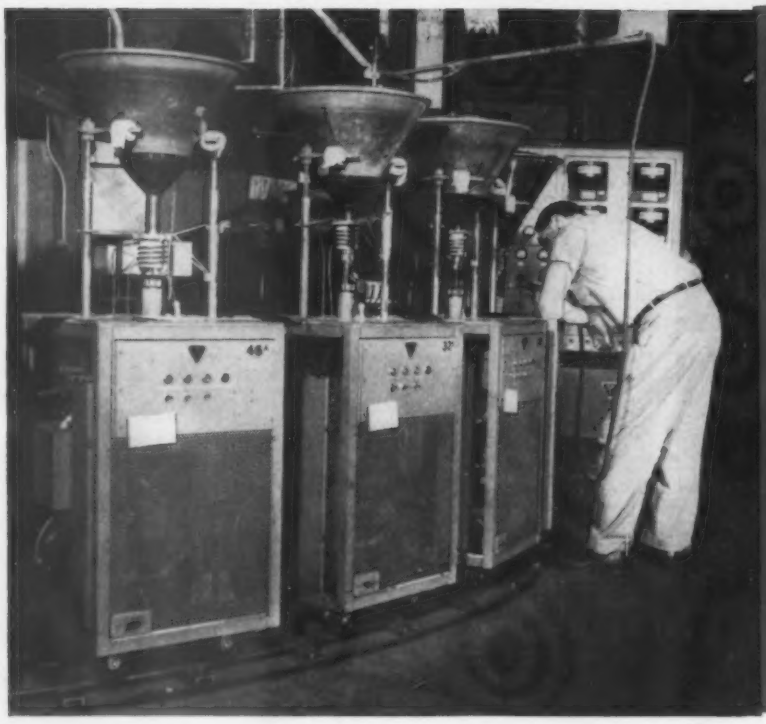
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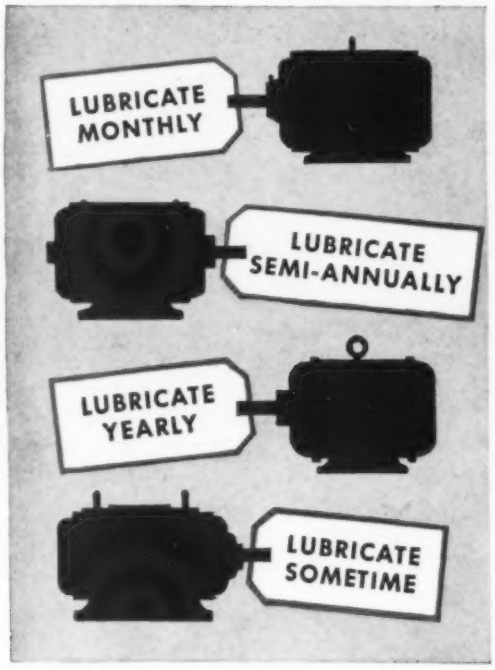


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